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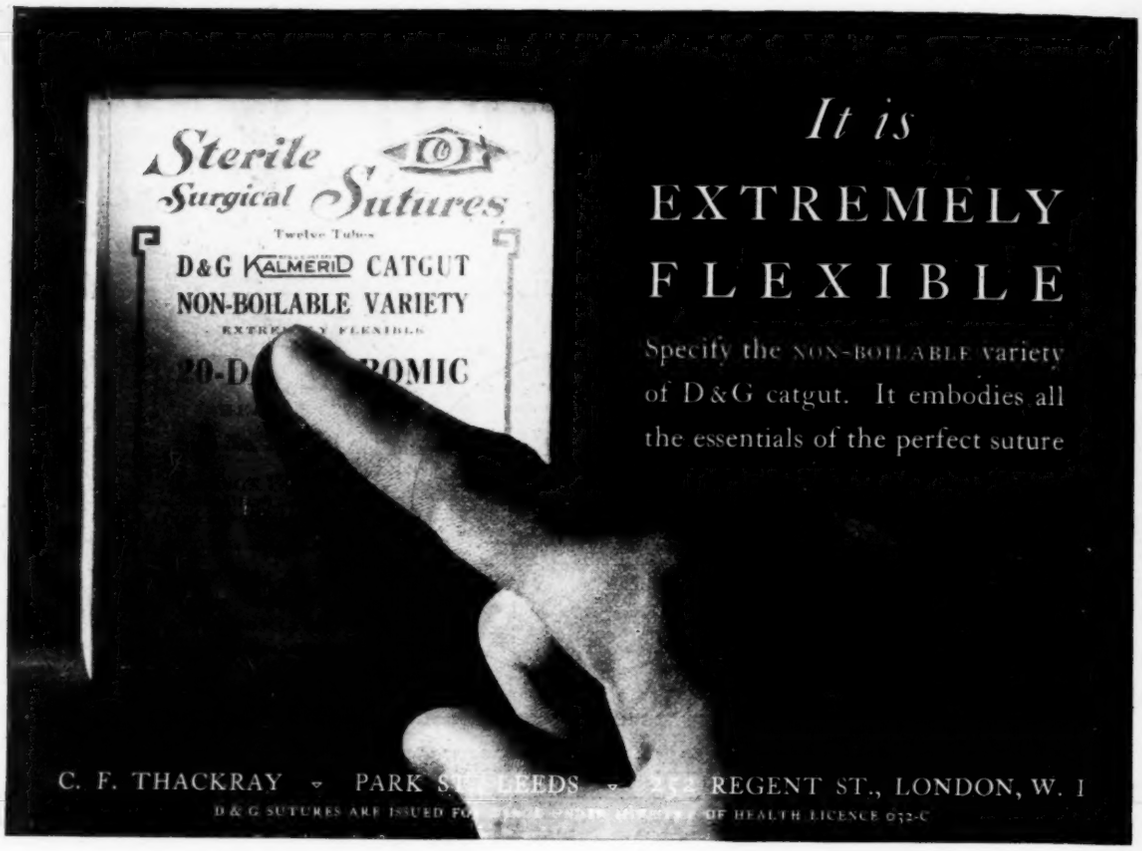

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A Paper

ON

TISSUE CHANGES IN VIRUS DISEASES*

BY

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Since the war, investigations of virus diseases have been in many directions remarkably fruitful, and the experimental methods employed have been pursued with such intensity in particular instances that the results have illuminated many hitherto obscure problems concerning the interaction of host tissue with parasites, both visible and invisible. Intimate tissue changes have also received their full measure of attention. I emphasize this point because it has been said, with considerable truth, that the advent of the bacteriological era, with the possibility of demonstrating the causative agents of infectious disease in the tissues, has had the effect of withdrawing attention from the minute histological study of the interaction between host and parasite. The early phases of this interaction are still little understood.

On the whole, the bacteriologist has been concerned more with the demonstration in the tissue of an organism suspected to be there than with the unravelling of the tissue changes associated with its presence. Many diseases now definitely recognized as due to a virus passed through a phase of this kind when it was considered imperative to demonstrate some gross bacterial or protozoal cause. A cause of disease not demonstrable in the tissues, or, if demonstrable, not differing essentially in character from well-known aetiological agents, was unthinkable. The rapid growth of the experimental study of viruses, not only in susceptible animals but also under various *in vitro* conditions, has also reacted favourably on another side of the problem by supplying material more suitable in every way for accurate histological study than material from the spontaneous disease.

Definition of a Virus

That viruses are living organisms distinguished from the visible bacteria only by their small size and occupying positions on a dimensional ladder having its upper rung at or about the limit of microscopic vision is a postulate to which, presumably, a majority of workers on viruses will subscribe. I say nothing about the position of its lowest rung except that the most recent work on filtration of virus through graded collodion membranes has revealed the existence of viruses of dimensions exceeding by only very little that of a molecule of haemoglobin.

The recently ascertained fact that there exists a group of viruses—variola, vaccinia, fowl-pox, ectromelia, molluscum contagiosum, etc.—whose individual elements are just big enough to be detectable by appropriate staining methods (if not yet in the fixed tissues, at least in appropriately stained smears of the material of the lesion) will enable us to work out with greater precision than hitherto the corresponding tissue-parasite interactions. Other groups of viruses, not at present known to be associated with elementary bodies but certainly accompanied by cell inclusions of a particular type, may, it is hoped, come into line in the future, but there will remain still another group whose presence in the tissues of the infected host is not, so far as we know, characterized by any peculiar histological picture or specific morphological cell change of the inclusion type. While cell inclusions in a virus lesion have, in certain types, greatly aided our understanding of the mode of attack of virus on tissue, no less, and possibly greater, interest attaches to the inflammations, the necroses, and the proliferations (or their combinations) which in individual virus diseases mark the essential disturbance. As yet the cultural requirements of viruses are, in all but a few instances, unknown, so that in our attempts to group apparently similar types of lesion due to different viruses we lack that valuable correlation which, among the visible bacteria, exists between the cultural and biochemical properties of a group of organisms and the type of tissue lesion. In a series of lectures Kettle has elaborated this interesting theme and shown to what an important extent the cultural characters of organisms are reflected in the lesions they produce. Unfortunately, in the virus field we can at present only hazard the suggestion that similar or cognate tissue lesions may ultimately prove a guide to relationship in cultural properties.

Types of Gross Lesion in Virus Diseases

It will be convenient to consider briefly some of the more general features of systemic tissue change met with in naturally contracted virus disease before passing to the far more fascinating developments opened up by their experimental study. As in bacterial infections, so also in virus infections, we find indisputable evidence of organ and tissue affinities.

Inflammatory and Degenerative

In the great group of pock diseases, including mammalian and avian pox, we find the essential lesions in the skin and only occasional evidence of gross changes in organs; but in the skin itself there are notable differences in the mode of attack and development of the lesion. In vaccinia and small-pox the lesion is essentially an inflammatory one commencing in the vascular tissue of the dermis, which is primarily attacked with resulting oedema producing the characteristic vesicle. The adjoining epithelial cells are, from my own studies, only secondarily involved, and exhibit the swelling or ballooning and reticulation described by the older writers. As to systemic changes, it is now well recognized that ordinary vaccination may be followed by definite splenomegaly (especially in young adults), and it has been noted as a frequent occurrence in rabbits. Focal necroses in the liver have also been observed in fatal cases of small-pox. These evidences of systemic spread of virus after ordinary vaccination are of great interest as they represent, on a small scale, the miliary organic lesions obtainable with virus of artificially raised potency.

In natural and experimental fowl-pox the external lesions have, partly owing to their naked-eye appearance and partly owing to some misinterpretation of the histological picture, been thought to be predominantly epithelial proliferations, and it is Goodpasture's opinion that an irritative epithelial hyperplasia represents the primary lesion which later ends in regression and healing. My own studies and those of Andervont have not revealed any very obvious hyperplasia of epithelia in the comb lesion. The nodule consists of enormously swollen and obviously degenerate cells which, with the overlying purulent exudate which has passed outwards from the inflamed dermis, are confined by the resistant corneal layer. The swollen epithelia contain the well-known Bollinger bodies, shown by recent evidence to consist simply of intracellular aggregations of the elementary bodies of Borrel. These latter almost certainly represent the actual virus bodies. Lesions other than cutaneous are rarely found in the spontaneous disease. The pock viruses therefore afford excellent examples of inflammatory skin lesions with accompanying haemorrhagic necroses and degenerative changes in neighbouring epithelia, which, in vaccinia at any rate, seem to be due to interference with their nutrition by the inflammatory disturbance in the dermis below.

[3751]

* Read in opening a discussion at the meeting of the combined Sections of Bacteriology and Pathology at the Centenary Meeting of the British Medical Association, London, 1932.

Degenerative and Necrotic without Inflammatory Disturbance

As an example of a virus disease which apparently produces a pure necrosis of parenchymatous cells without any inflammatory change, yellow fever may be taken. Careful histological studies of yellow fever tissue by Klotz and his associates, Hudson and others, show that the lesions in this disease consist essentially of fatty degenerations, necroses and necrobioses affecting liver, kidney, heart, and spleen, with little or no trace of inflammatory response except possibly in jaundiced conditions where some hyperplasia of the Kupffer cells of the liver may be present. When recovery takes place liver necroses would appear to be replaced by regeneration of liver cells without any scarring.

Central Nervous System

For purposes of grouping, based on histological findings, the viruses associated with definite lesions in the central nervous system may be divided fairly clearly into two classes, of which (*a*), represented by herpes and vaccinia—the latter after intracerebral inoculation only—produces meningitis with little or no encephalitis, except possibly in the immediate neighbourhood of overlying areas of intense meningitis, while (*b*), represented by rabies, poliomyelitis, Borna disease, and louping-ill, attack mainly the neurons. The latter group would also contain the post-infectional and, so far as we know, the post-viral encephalomyelitic conditions which are accompanied by extensive demyelination. At the moment we have no satisfactory explanation to offer of these disturbances, as, so far, it has been impossible to reproduce them experimentally. As they stand, whatever primary viral infection they follow, the lesions form a characteristic histological picture. Spontaneous disease of the central nervous system associated with demyelination has indeed been noted in dogs and monkeys but has not proved transmissible. Inflammatory changes undoubtedly accompany these degenerative lesions, but the point has been raised by neurologists like Spielmeyer whether the inflammatory conditions may be consequent on irritation due to degenerate cell products produced in the primary attack and may not themselves be primary. On the other hand the ushering in of conditions like post-vaccinal encephalitis by high and often persistent fever does undoubtedly suggest the onset of some fresh and presumably inflammatory process.

Pulmonary Manifestations

These are of great interest in certain virus diseases which in nature are most probably contracted by the respiratory route and which can be communicated experimentally only by this channel. Thus while the involvement of the lungs in human psittacosis is the rule, these organs are involved in experimental animals such as rabbits and monkeys only when the injection of virus is intratracheal. In monkeys the characteristic picture is the thickening of the alveolar walls by cellular proliferation and infiltration, the exudate being of the mononuclear type. In human psittacosis, the pulmonary lesion differs from that in influenza in being essentially lobar, accompanied by fibrinous exudate and haemorrhages in the severely damaged areas, but unaccompanied by polymorphonuclear infiltration. So also when vaccinia is given intratracheally to rabbits (as in the experiments of Muckenfuss, McCordock, and Harter) areas of haemorrhagic and gelatinous consolidations occur and the primary response appears to be a mobilization of mononuclears within the alveoli and about the bronchi and blood vessels. As in the dermis, vascular necroses and haemorrhages are prominent. Guarnieri bodies are detected in the bronchial but not in the alveolar epithelium.

In quite a number of well-known virus diseases such as distemper, rinderpest, fowl plague, etc., there is a strange lack of obvious tissue change in fatal cases. While the virus is distributed throughout the body it does not appear to be localized anywhere with production of gross tissue change. Accurate histological examinations in such infections are still very desirable—it should be remembered that it was not till 1914 that typhus fever was found to possess a specific histological picture. Even in such infections as rabies, a lack of correspondence between the amount of structural change and the clinical severity has frequently been noted in experimental work with monkeys. Careful microscopical examination may be needed to detect the scanty cellular lesions present in some animals which succumb to the virus (Hurst and Pawan, 1932).

Proliferative Lesions

The outstanding example of an essentially proliferative lesion possessing malignant and metastatic properties is naturally the Rous sarcoma, and those other avian types which have since come to light and which are capable of being induced by cell-free material. Histologists seem to be agreed that these proliferations are genuine malignant neoplasms, but there is possibly not the same unanimity with regard to the precise mechanism involved in the transference of the disease by a cell-free filtrate. This subject is as yet too controversial for useful discussion here, but as regards the benign proliferations known as warts the evidence that these are produced by a filterable virus, both in man and in dogs, is reasonably complete. The recent work of de Monbreun and Goodpasture on infectious oral papillomatosis in dogs reveals remarkable species- and cell-specificity on the part of the virus concerned. It is capable of infecting puppies only and other animals not at all. Moreover, even in puppies it is able, unlike the human wart virus, to infect only when introduced into the buccal mucosa. Introduction of the virus into skin areas is without effect. The histology of these warts is of extreme interest from the point of view of virus action, for in the study of dog warts to which I have just referred it would appear that the essential histological feature of the wart is the layer of enlarged clear epithelial cells (the so-called wart cells), showing increase both of cytoplasm and nucleus, which overlie a completely normal basal Malpighian layer. These altered cells would correspond in position to that of the swollen epithelia in the fowl-pox lesion, but definite inclusions have not been found in them as in the latter. It is the fate of these altered cells during the stage of regression to become compressed and flattened under the overlying keratin layer and ultimately to disappear. Inflammatory disturbance in the dermis is only slight.

Cytotropisms

The affinities for certain cells (or cell tracts) exhibited by certain viruses in the early, or earliest, period of their invasion of the body have given rise to considerable controversy. I have already referred to the fact that the virus of vaccinia in its invasion of the skin is now known to attack primarily the vascular endothelium of the dermis, though a strict epidermotropism had formerly been postulated. Still more recent work by Goodpasture, who has infected the chorio-allantoic membrane of the chick embryo with vaccinia virus, shows the presence of Guarnieri bodies not only in ectodermal and entodermal epithelia, but also in endothelia and fibroblasts of the mesodermal tissue. These Guarnieri bodies would, like the Bollinger inclusions, appear to consist of aggregations of the corresponding elementary bodies of Paschen.

On the other hand, so far as the presence of Bollinger bodies is concerned, fowl-pox would seem, under similar experimental conditions, to be associated only with ectodermal and endodermal structures. I am not able to subscribe to the inference drawn from this fact by Goodpasture that the Borrel bodies are not only cytotropic but cytotrophic. It is well known that the virus of fowl-pox invades the system although it localizes only in the skin. Further, impression preparations of cross-sections of fresh fowl-pox lesions in the comb have shown masses of extracellular Borrel bodies as well as the intracellular aggregations which form the Bollinger body. Moreover, inoculation of fowl-pox into the dermis of the comb causes

an acute necrotic and inflammatory lesion not necessarily accompanied, until late, by those characteristic changes in the epithelia which are seen after ordinary scarification with the virus. Also in the early stages of vaccinia the Paschen bodies would appear to be entirely free. In ectromelia, though the chief sites of the Marchal inclusions are the epithelia of skin, salivary glands, pancreas, and intestinal mucosa, their presence has also been noted in the mesodermal cells of the subcutaneous connective tissue. The recent experimental work of Fairbrother and Hurst, and of Hurst, has shown that the virus of poliomyelitis travels by the axis cylinders and that the primary attack is on the nerve cells, the accompanying vascular disturbances in the vicinity of the destroyed nerve cells being a secondary phenomenon. This example would constitute a genuine cytotropism, and it is of very great interest that, as Hurst, Findlay, and Brownlee and Wilson have shown, the virus of louping-ill appears to pick out for attack in the mouse, the monkey, and the sheep the Purkinje cells of the cerebellum, which undergo extensive, and sometimes complete, destruction.

Experimental Modifications of Virus and Tissue Change

It is becoming increasingly evident that a change of host or a change in the method of propagation of a virus may profoundly alter the pathological picture commonly associated with that virus and may bring to light unexpected tissue affinities. This subject is really an old one, and embraces such well-established phenomena as the attenuation of variola by variolation of bovines and of the street virus of rabies by passage through rabbits. From the more modern researches on this subject I choose two instances only, one illustrating the effect of altering the method of propagation and the other the effect of change of host.

The virus of vaccinia, after serial propagation in rabbit brain or rabbit testicle, acquires a greatly enhanced power of invasion from whatever site it is introduced and is capable of producing gross lesions of characteristic type in many organs, including the lungs, liver, spleen, adrenals, and generative organs. These organ lesions, which were first described by Douglas, Smith, and Price, have, on histological examination (Ledingham and Barratt, Bijl and Frenkel, etc.), revealed the general picture of a haemorrhagic septicaemia with accompanying miliary necroses of parenchymatous cells and inflammatory response on the part of the adjacent reticulo-endothelial system precisely similar to that seen in the dermis. The lesions in their simplest form, as seen in the subpleural region of the lungs or in the ovary or under the peritoneal surface of the intestine, consist of vascular necroses with well-marked compensating hyperplasia of the overlying endothelium to form a defence plaque. These plaques resemble the well-known epithelial plaques which form in response to vaccination of the rabbit cornea. To what this increased invasive or localizing power on the part of the virus is due is not yet known. It is possible that growth of virus in testicle yields a product far richer, per unit weight of tissue, in elementary bodies than does growth in skin, but there is almost certainly some inherent change in virulence as well. Now that the elementary bodies are believed to constitute the actual virus and can be obtained in a pure state, these problems will doubtless be solved in the near future.

To illustrate the effect of change of host on tissue affinity I take the recent work on yellow fever virus. The virus of yellow fever was found by Theiler to be communicable to the mouse by intracerebral inoculation. In this animal it produces a definite encephalitis. In the monkey, on the other hand, when the virus is intracerebrally introduced no encephalitis occurs, but the liver lesions are present as usual. If the virus which has been accommodated to mice by intracerebral inoculation is inoculated intracerebrally into the monkey (Sellards and Goodpasture) an acute disseminated encephalomyelitis is produced with necrosis of ganglion cells, but the meninges are not involved and focal necroses in the liver do not occur.

Such remarkable adaptations as these render dangerous the postulation of any stereotyped elective affinities of viruses for cells or tissues.

Combined Effects of Virus and Bacterium

The participation of concomitant bacteria in the production of tissue changes ostensibly due to virus has always excited a good deal of attention, particularly in connexion with such controversial subjects as influenza and the common cold in man—both of which may prove to be induced, at any rate primarily, by viruses—and in conditions such as swine fever, where association of the virus with organisms of the Salmonella or Pasteurella groups is not infrequent. These latter organisms are believed by many to be responsible respectively for the characteristic diphtheroid lesions in the intestine of chronic swine fever cases and for the pneumonic lesions, but accurate data as to their relative importance in the combined lesions are still wanting.

Perhaps the most interesting recent study of this question is that of Shope (1931) in connexion with the disease known as swine influenza. The details of this study cannot be referred to here, but the author claims to have shown that the clinical syndrome of swine influenza can be experimentally induced by a true filterable virus acting in conjunction with a haemoglobinophilic organism, *H. influenzae suis*. This organism, which was regularly obtained from the respiratory tract of swine experimentally infected with material from clinical cases, proved, in pure culture, to be completely unable to induce disease in swine by intranasal inoculation. The filterable virus, on the other hand, which was obtained by trituration of diseased lungs and lymph nodes, while it could not by itself produce typical clinical swine influenza, was able to produce (in seven out of ten trials) an exceedingly mild disease, denoted the "filtrate disease," and characterized by very slight transient fever, apathy and loss of appetite for a few days, slight cough, and some leucopenia. *It was also contagious.* The combination of this comparatively innocent filterable virus with artificial cultures of *H. influenzae suis* was capable of reproducing with exactness the severe and typical lesions of clinical swine influenza, so that apparently the presence of the virus conferred on *H. influenzae suis* powers of invasion it did not possess in its absence.

The lung lesions met with under various experimental conditions are of interest. If normal swine were inoculated with raw material from spontaneous cases, and the animals were killed during the febrile stage, but otherwise showed no external sign of disease at time of slaughter, massive areas of atelectasis, not crepitant and not consolidated, were present in certain lobes. The adjoining portions of lungs were emphysematous. In fatal cases only those areas which would have been atelectatic in uncomplicated swine influenza were pneumonic.

If the animals were inoculated with filtrate only and then killed, the amount of pulmonary atelectasis "varied from a scant amount in one or two of the upper lobes to an amount as extensive as that shown by mild cases of swine influenza."

The pathology of the lesion after inoculation of a mixture of filtrate and *H. influenzae suis* was typical of the natural disease. Space forbids any full discussion of this interesting work, but there is no doubt that it will have to be seriously considered in connexion with further

attempts to elucidate the aetiology of epidemic human influenza. So far as it goes this work on the swine influenza virus accords well with certain experiences and impressions recorded in the early waves of the influenza pandemic of 1918, when the clinical syndrome was frequently of almost as slight a nature as was the case in Shope's experimental disease produced by the filterable virus alone.

Cell Inclusions in Virus Infections

I shall do no more than outline the present position with regard to these interesting structures. There can be no doubt that in the past the study of these inclusions, which are so prominent features of certain virus diseases, has withdrawn attention from the study of the more general and perhaps the more proper tissue changes associated with such viruses. So greatly has this study of cell inclusions obtruded itself that it has been thought fit to speak of certain virus diseases as "inclusion diseases" or "Einschlusskrankheiten."

In three cases only—namely, the Bollinger body in fowl-pox, the inclusion body in molluscum contagiosum, and the Marchal body in ectromelia—is the nature and composition of the inclusion understood, and it would appear almost certain—also from quite recent work—that the well-known Guarnieri body in small-pox and vaccinia is made up of elementary bodies (Paschen bodies). The effect of these demonstrations will be to stimulate investigation on similar lines, not only of other well-known intracytoplasmic bodies like the Negri body, but also of the intranuclear inclusions (as met with in varicella, herpes, virus III, yellow fever, laryngotracheitis of chickens, etc.), in the belief that they also may represent invasions of noble and other cells by elementary bodies. This belief receives some support from recent work by Pinkerton and Hass (1932), who find that the rickettsiae of Rocky Mountain spotted fever multiply in the nuclei of cells in tissue culture, forming spherical clusters sometimes resolvable into individual elements, sometimes not. In the latter state the clusters resemble the more compact nuclear inclusions of other virus diseases. It is of great interest that very similar intranuclear bodies have recently (1932) been reported in 33 per cent. of gliomatous tumours examined by Russell, who suggests that the frequency of these structures in gliomas points to a virus being the cause of the growths. In the organs (liver, kidney, salivary glands, etc.) of apparently healthy adult animals also the occasional presence of intranuclear inclusions has proved of inestimable value in drawing attention to the existence of an associated virus, especially since the work of Cole and Kuttner on the salivary gland virus in the guinea-pig. We now know that in infants, monkeys, dogs, rabbits, rats, and mice similar inclusions may be found, and it is reasonable to suppose that their presence connotes a latent virus. The fact that inflammatory lesions are not infrequent in the neighbourhood of the "infected" cells should be borne in mind. It is worth speculating, perhaps, whether this unexpected presence of latent virus without associated clinical disturbance may play some part in the causation of syndromes such as post-infectional encephalitis.

Concluding Remarks

The types of tissue change met with in various virus infections do not differ in essence from those encountered in infections due to the visible bacteria. Where they seem to differ, as in those virus infections associated with characteristic cell inclusions, whether intracytoplasmic or intranuclear, the difference is probably not really of a fundamental nature, or one bearing the implication that viruses are essentially intracellular parasites. It is more probable that the penetration of epithelial cells, which we know to take place in fowl-pox, ectromelia, and vaccinia, is an accidental occurrence in the course of massive proliferation of the virus or of elementary bodies in their neighbourhood, and to which the invaded cell cytoplasm or cell nucleus reacts to its own or the parasite's advantage, or to the advantage of both. In any case a temporary symbiosis would appear to be established. It would be difficult to differentiate a process such as this from that occurring in leprosy and kala-azar, the parasites of which can establish themselves inside macrophages of the reticulo-endothelial system, or from that occurring in tularaemia, where the minute organisms of the disease invade the parenchymatous cells of the liver. The only difference between the two sets of phenomena is that in the former elaborate histological and microchemical techniques have usually failed to unravel the complex of invading parasite and cell constituents, owing to the smallness of the invading parasite, while in the latter demonstration of the invader is, as a rule, relatively easy. Further light on this problem will doubtless come from further attempts to cultivate viruses in the presence or in the absence of living cells. I may say here that the demonstration by Eagles and McClean of multiplication of vaccinia virus in cell-free medium makes it unsafe to postulate intracellular proliferation as a necessary attribute of viruses. Where living cells are present we know that characteristic inclusions appear and are valuable evidence of growth having taken place, but what we have not yet learnt from these studies is a knowledge of the early phases, the presumably free proliferative phases, which precede the obvious invasion of the cell. It will be the task of the future—certainly no simple task—to penetrate more deeply than has been hitherto possible into those earliest reactions between the host tissue cell and the invading virus or bacterium, and towards this end it is essential that the closest co-ordination be established between the experimental pathologist and the expert morphologist.

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POCK DISEASES *

BY

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The aetiological agents of the pock diseases are the so-called elementary bodies, first discovered by Borrel in fowl-pox and sheep-pox (Borrel bodies), and by myself in variola vaccine (Paschen bodies). Morphologically they are identical. We have here to do with minute, coccoid, sharp, round corpuscles, which divide into two dumb-bell shaped parts, and are always to be found in enormous quantities. They pass through the Berkefeld filter V, and can readily be deposited from the filtrate by high-speed centrifugalization—namely, 10,000 revolutions or more per minute.

INCLUSION BODIES: SIZE, STAINING METHODS, AND DISTRIBUTION

I have fixed their size in the coloured preparation at from 0.2 to 0.25 μ. In tests based upon mathematical and physical calculations Bechhold arrived at the value of 0.21 to 0.23 μ, while filtration experiments carried out by Elford and Andrews suggested that vaccinia virus particles have a diameter of 0.125 to 0.175 μ—that is, considerably smaller than those of Bechhold and Schlesinger.

Ledingham judged correctly that the actual diameter of the naked Paschen bodies is smaller than 0.2 μ. The stained bodies which he obtained in pure suspension in formolized saline solution are obviously smaller than they would be in their natural element, where their size is increased by the addition of colouring matter and the presence of serum protein in the lymph.

In 1911 Jacobsthal and I showed that the elementary bodies of infant lymph are specifically agglutinated by immune serum. Ledingham, by an improved method for obtaining pure suspensions of elementary bodies, was able to follow up the agglutination in the hanging drop—the stained clumps consisted entirely of elementary bodies.

Presumably, the Paschen bodies possess a lipoid membrane, and are thus very resistant to the process of drying. They cannot be shown with the usual dyes, but only by using hot Löffler mordant, followed by heated acid carbolic or aniline fuchsin, gentian, or methyl-violet. The methods of Fontana-Tribandeau, Morosow, and Giemsa also render them visible. A slight trick is, however, first necessary—namely, to minimize the layer of serum surrounding the elementary body. The dry smears are, before staining, placed perpendicularly in saline solution made with distilled water (I prefer Ringer solution) for several minutes. After they have dried they are fixed in methyl-alcohol, and are then ready to be stained.

The Paschen bodies can be regularly demonstrated in large numbers in infant and cow-pox lymph, also in the rabbit virus lymph—especially in the two-day virus, which is almost a pure culture. They are also found in the content of variola pustules—that is, in variola vera, varioloid, and alastrim. The same bodies were found by me in appropriate material from various countries—Germany, Switzerland, England, Portugal, Haiti, Togo—and in the primary, secondary, and early throat lesions in inoculated pox (Togo). When the cornea of the rabbit is vaccinated with variola vaccine material, besides the Guarnieri bodies the Paschen bodies can always be demonstrated when using the "Klatsch" method. When vaccinating with neurolapine (neurovirus) the Paschen bodies are always found in great quantities in the metastatic lesions of the skin and internal organs (lungs, spleen, liver, adrenal glands, testis), in the smears as well as in the sections, when the method of Levaditi is used.

Are they Causative Agents?

In the case of fowl-pox, according to the method of Goodpasture and Woodruff, I believe it would be possible to isolate separate Guarnieri bodies from the pustules of vaccinated infants and to infect with them, if this should be actually desired as a crucial experiment, to prove the nature of the agents concerned. Actually, this proof has already been given by the morphological demonstration of the Paschen body in the tissue culture (Nauck and Paschen) and in the vaccine culture in a medium free from cells (Eagles and Ledingham). In vaccination with cultures originating from an infant lymph they always, in spite of high potency, produced the same type of reaction as the usual calf lymph. On the other hand, the typical reactions of neurolapine, with accompanying necrosis and haemorrhages, were obtained with cultures derived from testis vaccine, kindly sent me three years ago by Dr. Eagles. E. Gildemeister made similar observations with his cultures (as he informed me personally), which also started from testis vaccine. Thus we see that a quality acquired by a virus through organ passage is maintained in artificial cultures *in vitro*. Considering the results I have obtained, I believe myself justified in declaring that the so-called Paschen bodies, discovered by me, are the aetiological agents of the variola vaccine. I owe special thanks to Professor Ledingham for having given credit to the Paschen bodies by the excellent work which he has now been carrying on for many years.

INTERRELATION OF POCK DISEASES

Starting from a common source—the original pock (probably the human pock)—and resulting from the continuous passages through one and the same host (that is, the same species of animal), three different strains have developed. These are: human pox, fowl-pox, and sheep-pox. It is true that in a great number of animals the pock virus is only primarily present, and develops later into ephemeral pock eruptions. As a rule, the illness soon wanes, cannot be carried on in passage, and leads to no epidemics. This process can be experimentally

* Communication made to the Section of Pathology at the Centenary Meeting of the British Medical Association, London, 1932.

repeated. The same species of animal shows only unimportant local reactions after deliberate inoculation; it is, however, immune against a second pock vaccination, and also against cow-pox.

The most marvellous experiment in the realm of medicine—namely, the transformation of the aerially contagious virus of human variola through the cow or horse into the vaccinia phase, which produces only local reactions and is non-contagious—was brought about by Nature herself in primeval times. Presumably cow-pox is as old as pox itself. The theoretical explanation of the transformation of variola into vaccinia met with the greatest difficulties, and it was only due to the united efforts of many scientific investigators that light was brought into this darkness. It is highly probable that the manner in which the virus penetrates into the body, and the route it takes, play a very important part. The pock agent, which is disseminated in the air by the patient when speaking, coughing, or spitting, finds its way into the mucous membrane of the upper respiratory organs of contacts. In the case of throat lesions I have demonstrated the presence of numerous elementary bodies, especially in the early stages. In susceptible individuals the cells surrounding the part where the virus has lodged become irritated and damaged, as is evidenced by proliferation, various kinds of cell degeneration, and coagulative necroses. The process attacks the neighbouring lymph and blood vessels, and leads to thrombophlebitic processes with enormous increase of the virus. Finally, there must develop a septic focus in the course of the incubation period. This lesion must lie in the lungs; otherwise there is no explanation for the sudden enormous inundation of the blood stream, and for the occurrence of metastases in skin and internal organs (liver, bone marrow, adrenal glands, testis, and spleen). Certainly no one has so far seen this primary focus. As an explanation of the process I agree with the excellent work of Helmuth Nathan of Hamburg (published in *Virchow's Archiv*), who succeeded in demonstrating macroscopically a pulmonary venous thrombophlebitis in twenty-eight of thirty-one patients who at necropsy showed multiple abscesses.

If there were no such process it would be impossible to understand the course of variola inoculata. Most scientists deny an increase of the agent in the circulation, but the occurrence of an incubation period before generalization of the virus could not be explained by the agent simply having to wander through the lungs. The sudden inundation of the blood with virus shows that primarily one or more lesions giving enormous multiplication of virus must have been created. Experimental work with neurolapine in the case of rabbits, about which I shall speak later on, entirely supports this hypothesis.

Pathology

In the case of variola we have, therefore, a typical septic process, whereas in vaccinia the state of affairs is entirely different. Certainly, even with vaccinia the agent circulates regularly in the blood; but there is only a bacteriaemia, and we have here a minus variant. This minus variant can be experimentally removed—at least partially. It is done by forcing vaccinia virus to accustom itself to a tissue which is strange to it (as, for instance, the brain or the testis), or to higher temperatures (Armstrong's heat-resistant vaccine virus). Many passages are necessary before the virus is made to multiply, and in later passages enormous increase takes place. Levaditi was able to infect with neurovaccine in dilutions of 1 in 10 millions. This neurovaccine (neurolapine or testilapine) is very similar to variola; Bijl called it the variola of rabbits. The special characteristics of it are the formation of metastases and a liability to necroses and haemorrhages. It is only since neurolapine has been experimented with that there have been occasional reports of the "spontaneous" appearance of pox in rabbit cages (Levaditi, Armstrong). In consideration of the part (100 per cent.) that the lungs play in metastases with neurolapine, one might perhaps consider the possibility of infection through the respiratory organs.

The experimental study of neurolapine, introduced by Levaditi and his colleagues, has made a breach in the doctrine, set up by Levaditi himself, of the elective affinity of vaccinia—and especially of neurolapine—for cells and tissues of epiblastic origin. In numerous works (Walthard, Winkler, Demme, Gildemeister, Douglas, Smith and Price, Ledingham and Barratt, Bijl and Frenkel, Paschen, etc.) it has been demonstrated that the vaccine virus also affects the mesenchymal tissue. Douglas, Smith, and Price showed, in their work on generalized vaccinia in rabbits, with especial reference to lesions in the internal organs, that almost all the tissues of the body may develop macroscopic lesions, no injury or irritation being necessary. The internal viscera most commonly affected are the lungs, liver, spleen, adrenals, and the organs of reproduction. The mesodermic origin of an organ does not mean a non-susceptibility to vaccinia. According to the scientists mentioned, and also to Sobernheim and Paschen, such so-called affinities are merely the result of acclimatization to a new environment. Given the opportunity, the virus might be able to attack any tissue as easily as calf lymph attacks the epidermal surface. The lesions have a distinctive appearance microscopically and macroscopically, and are unlike any other lesions with which we are conversant. The lesions in the internal organs are always bacteriologically sterile, and contain the virus in sufficient quantities to reproduce the disease. They compare the generalized diseases in the case of rabbits with the alastrim or the uncomplicated variola. In the case of virulent pox all investigators found infections complicated by the presence of pyogenic cocci, chiefly streptococci. The authors suppose that the difference between alastrim and small-pox consists in the former being called forth alone by the pox virus, the latter by the pox virus combined with pyogenic cocci. The comparison is not quite adequate in so far as the neurolapine almost regularly kills the rabbit without the co-operation of bacteria. I believe that animals often die through the absence of adrenaline. The cortex of the adrenals, which are of mesodermal origin, frequently only shows rests of normal tissue.

Features of Experimental Virus Infections

Ledingham and Barratt, Frenkel and Bijl, Lillie and Armstrong, McIntosh and Scarff, Paschen, and others give exact descriptions of the alterations in tissue in experimental vaccine-neurolapine—for example, neurotesticular lapine. According to Ledingham the neurolapine obtained by testicular or brain passage has not acquired new properties compared with dermovaccine, but rather it has become possessed in an intensified form of properties shared also in a limited degree by strains of cutaneous source. The observed increase in endotheliolytic and endotheliotoxic powers must augment not only the chance of invasion from a skin area, but also the strength of the inundation, and it is presumably on the latter that the production of actual visceral lesions will depend.

In the case of vaccine virus propagated from dermis to dermis, and also by subcutaneous inoculation, a slightly increased tendency is shown at the spot itself, presumably in consequence of the unusual conditions of growth in the mesoderm under anaerobic conditions; it is only possible to maintain them virulent through two passages

at the outside. Presumably this is also the cause of the short decreased immunity after intradermal vaccination of the child, as shown by Kirsch. On the other hand, dermolapine carried on to the epilated superficial part of the skin (ectoderm) of the rabbit develops very quickly and luxuriantly. After two days the vaccinated area is dark red and papular, and contains the agent in enormous quantities, as in pure culture. Neurolapine and testilapine vaccinated in the same manner develops much more slowly; it must first gain the germinal layer suitable to it; it then increases with great rapidity, leading to those serious changes which are so well known—necrosis, widespread haemorrhage, and quickly developing gelatinous oedema.

The lesions in the lung in the case of neurolapine are of special importance as regards the further fate of the animal. The pock virus, which gets into the lungs through the blood, invades the alveolar walls and first of all attacks the cells of the septa. The epithelial cells swell, the endothelial cells proliferating rapidly. Serious vascular changes appear in the lung, the blood vessels being, as a rule, extremely congested, while some are thrombosed. The small veins especially show an inflammatory infiltrate in their walls. Perivascular infiltration and severe necroses are frequent. Proliferation is the most obvious symptom, with a mesenchymal reaction in the shape of a cellular perivascular infiltration (Bijl, Armstrong)—processes which are also found in post-vaccinal encephalitis and in organ metastases. The lesions are always in the neighbourhood of vessels. The site of inoculation is immaterial: the way always leads to the lungs, and from there, after propagation of the virus, to the left heart and the general circulation. The fundamental difference from dermolapine lies in the fact that in the latter the agent simply passes the lung without causing lesions. Where overdoses of dermolapine have been given only a hyperaemia occurs in the lungs. Sometimes after vaccination with neurolapine—also after cutaneous vaccination—typical metastases appear on the cornea (Armstrong, Paschen); I have only observed this once after vaccinating with dermovaccine. When intraperitoneal inoculation was made with material from the later passages of testilapine, Douglas, Smith, and Price found an increased affinity of the virus for the peritoneal cells. The organs of reproduction were attacked with remarkable frequency; the bladder, too, showed numerous lesions.

Formation of Inclusion Bodies

Great importance has always been attached to the inclusion bodies observed in virus infections. With inclusion bodies that have appeared after vaccine inoculation of the cornea, uniformly similar lesions are not found, as I showed in 1911. Borrel declares in an article which appeared in 1924: "La véritable origine des inclusions semble complexe."

Five different factors participate in the formation of the inclusion bodies:

1. Phagocyted leucocytes.
2. Extruded nucleoli.
3. Protruding chromatin.
4. A great part are formed through lesions in the plasma with components of plastin and chromatin without inner structure. They are not specific, as they also appear after vaccination with diphtheria, Shiga, and gas-gangrene toxin. With this vaccine it is a case of a varying toxin that exerts a dissociating effect upon the chromatin and plastin parts that are normally united in the plasma.
5. Cap-shaped lesions on the nucleus. With the best colouring and illumination, the minutest bodies are found that presumably correspond to elementary bodies. These are colonies of agents. When making tests with infant, calf, and variola pustules only these inclusions are found, whilst the inclusions of Group 4 are missing. Most likely, the variability in the conditions of the current plays a decisive part.

According to Goodpasture, Woodruff, and Buddingh vaccinal lesions in the chorio-allantoic membrane of the chick embryo offer a most excellent opportunity for studying Guarnieri and Paschen bodies in their relation to each other. There is no doubt that the Guarnieri bodies consist, at least in part, of colonies or masses of Paschen bodies, a hypothesis which I have long upheld. Vaccinia attacks the cells of the three germinal layers, whilst fowl-pox only attacks ectodermal and (to a less degree) entodermal epithelium. Woodruff and Goodpasture agree with the view held by Rocha Lima, Lipschutz, and myself that the inclusion bodies of fowl-pox consist of elementary bodies enclosed in a lipoid capsule. Apart from the difference in the size attained and their time of appearance, the inclusions of fowl-pox, whether they appear in the skin or the cornea of the chick, have, without exception, a lipoid component, which is never found in vaccine. So far as this reaction is concerned, therefore, vaccine virus represents a minus variant. Saito sees in this a difference between fowl and mammalian pox agents which is independent of the substrates. The pustule produced by vaccinia on the skin or comb of the chick does not show the histological features of fowl-pox, but those of the vaccinia or variola pustule, without formation of Guarnieri bodies; it contains, however, elementary bodies. In fowl-pox the agent generalizes soon after insertion, and invades all the tissues, but without metastases. At the most the lungs are hyperaemic, but show no lesions. The virus remains active for a long time in the body, and ovum and embryo (my own observations) are liable to be infected.

Role of Insect Vectors

Recent experiments have proved that in epidemics of fowl-pox a vector plays an important, if not the chief, part. This transformation of variola to fowl-pox through passage of blood-sucking insects—such as *Culex pipiens*—will most probably have taken place in primeval times, when mankind and animals lived together in the most primitive habitations. Infections of healthy chicks with *Culex pipiens* and *Aëdes aegypti* which had sucked the blood of fowls suffering from fowl-pox have been successful. Carl Stuppy has carried on these experiments at the Hamburg Tropical Institute, and has been able to prove that the infective properties of infected gnats were still active at the expiration of eighty-four days. Probably they remain infectious, active virus-carriers all their lives, though this property only starts from a certain date after sucking—possibly the tenth day. That proves that the virus propagates in the body of the gnat. Conditions here are similar to those in the case of yellow fever and dengue, and vaccination with the isolated intestinal tracts and salivary glands of gnats have given positive results. Sections through the stomach of the gnat reveal in the epithelial cells suspicious nodular inclusions beside the nucleus, in which up to the present the Borrel bodies have not been detected. The work is being continued. It should be emphasized that experiments made with gnats were entirely negative in the case of rabbits profusely vaccinated with vaccinia. In sheep-pox we have to do with a very infectious disease, characterized by a nodular eruption, especially in the skin, the lungs, the liver, and the kidneys. Characteristic inclusions are found in the pocks. Haemorrhages from the size of a pin's head to the size of a pea lie under the pleura. The lesions are similar to those of neurolapine. The manner in which the epidemic spreads is not exactly known, but it is quite possible that here, too, it is a question of infection through an insect vector.

MATERNITY AND CHILD WELFARE SERVICES IN THEIR RELATION TO PUBLIC HEALTH*

BY

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It is difficult on this occasion to escape the temptation to trace the work which has been done for the welfare of women and young children during the past hundred years. The year 1832 found industrial conditions firmly established in this country ; the factory system had replaced home labour. Both men and women were employed in the mills, and children, even so young as 7 and 8 years, accompanied their parents and were subject to all the disabilities and dangers attaching to ill-paid, arduous work in unsupervised and unregulated conditions. This had an inevitable reaction upon the health of the parents and on the physique and nutrition of the offspring, and the high rates of maternal and infant mortality which we still find to-day in many textile and industrial centres may be attributed, to some extent, to the unhappy circumstances of those early days.

The Reform Act of 1832 and the subsequent legislation relating to the Poor Law (1834) and the municipalities (1835) are the foundation upon which modern local government has been built up. Medical issues forced themselves upon the attention of the Poor Law Commissioners, and upon those responsible for the well-being of the community, and although maternity and child welfare, as we now understand it, was not recognized as a definite problem until early in the present century, the care of the lying-in woman, the control of the midwife, and the appalling infant mortality in many industrial districts, were matters which attracted repeated notice. Factory legislation and the appointment of women factory inspectors (the first two in 1892) improved the conditions of industrial workers, and by the end of the century the working hours for women in the textile industry were reduced to 65–66 a week. The Education Act of 1870 made education compulsory, and enabled the effect of industrial work upon young children to be closely observed. The establishment of the Board of Health, and later of the Local Government Board, led to the reform of sanitary environment and thence to responsibility for the prevention of disease in the individual, while the scope of the Poor Law medical services expanded and included many sick persons who were not technically destitute.

Advance in maternity and child welfare during recent years has been accomplished mainly through the Public Health Service, but the Poor Law was also responsible for maternity services, for the care of healthy infants and young children, and for infant life protection work. Official responsibility for the care of helpless children was recognized by the appointment of women inspectors of boarded-out children some fifty years ago, and subsequently of women inspectors for visiting children's homes, maternity wards, nurseries, and the quarters for women in workhouses. The Local Government Act, 1929, is designed to merge all public work for mothers and children into one comprehensive scheme in each area, and so abolish overlapping of function and the differentiation of treatment on social grounds. I propose to discuss the development of the work of midwives, of infant welfare, and of the maternity service, and then to consider some of the problems which present themselves for solution to-day.

* Paper read in opening a discussion in the Section of Public Health at the Centenary Meeting of the British Medical Association, London, 1932.

MIDWIVES

From the point of view of the midwife, the nineteenth century is noteworthy on account of the prolonged struggle for recognition and training which terminated in the passing of the Midwives Act, 1902. Midwives, like doctors, were originally licensed by the bishops, but when the medical faculty was created the midwives escaped notice, and in spite of the beginning of systematic midwifery teaching in the eighteenth century and the interest displayed by eminent physicians such as Smellie and Hunter, the midwife in 1832, and for a good many years after, occupied a low social position, was usually an illiterate, ignorant woman, and was regarded with a good deal of well-founded suspicion and distrust by the medical profession. But an appreciation of the value of a competent midwife to poor and needy women, and a growing understanding of the dangers to which they were exposed by the attendance of untaught " gamps," induced medical bodies, including the Society of Apothecaries, the Obstetric Society (founded in 1858), the General Medical Council, and the Royal College of Physicians, to interest themselves in the future of midwifery, and to support the endeavours of individual public servants, such as Dr. Farr and Florence Nightingale, and of the small band of educated women who took up midwifery from a sense of vocation, to create an instructed public demand for a body of trained midwives working under suitable control.

These efforts culminated in 1902 in the first Midwives Act and the establishment of the Central Midwives Board. While necessarily recognizing the claims of a large number of unqualified midwives already in practice, training and examination were, from this time onward, made compulsory for all entrants to the profession, and the foundations of a midwifery service were laid which it was hoped might some day equal that in France and Holland and other countries where there had long been official registration of midwives. Close supervision after qualification was, however, peculiar to England. Other Midwives Acts were passed in 1918 and 1926, amending and extending arrangements for the control and practice of midwifery. The Ministry of Health Act in 1919 brought the Central Midwives Board under the general direction of the Minister of Health instead of the Privy Council, and the expansion of maternity services has brought the midwife into considerable prominence, and has generally improved her position and status without, however, leading to the increased remuneration and easier conditions of living to which the highly responsible character of her work would seem to entitle her.

INFANT WELFARE

From investigations carried out in 1859 and 1865, Sir John Simon showed that the mortality among infants rapidly increased as adult women took part in factory labour or in agriculture. He pointed out that the conditions of industrial work were often detrimental to the mother's own health, and that early return to work after confinement, neglect of breast-feeding, and the handing over of the infant in the mother's absence to ignorant, incompetent " minders," had disastrous consequences. The employment of married women in heavy, ill-paid field work led to similar results. Sir George Newman (then medical officer of health for Finsbury) repeated and confirmed these conclusions in 1906, by which time the high infant mortality rate and the excessive sickness among young infants was beginning to attract more general attention.

Consultations des nourrissons and *gouttes de lait* were to be found in various towns in France and Belgium. Profiting by this example milk depots were set up at St. Helens, Liverpool, Bradford, Battersea, etc., to pro-

vide milk for necessitous infants, but with little, if any, supervision. In 1904 a milk depot, which was also a school of infant management, was founded in Finsbury, and in 1907 the St. Pancras School for Mothers was established on lines which have since served as a model for infant welfare centres. Similar centres quickly followed in London, Leeds, Salford, Manchester, and elsewhere.

The St. Pancras School for Mothers made early application to the Board of Education for grants in aid of classes, and the Board agreed to subsidize the teaching of sewing, cooking, etc. The grants were very small, but the application drew attention to the valuable social and preventive work which was being done and to the need for more substantial official support. The interest of both the Board of Education and the Local Government Board was aroused, and in the 1914 Budget provision was made for an extension of the grants-in-aid. Then came the war, and the welfare of women and children was soon a matter of general concern. The Notification of Births Extension Act in 1915, the Maternity and Child Welfare Act in 1918, and the creation of the Ministry of Health in the following year enabled local authorities, under official supervision, and with the encouragement of a 50 per cent. grant-in-aid, to put into operation extensive medico-social schemes for preventing mortality and morbidity in infancy and early childhood.

From the beginning, infant welfare has been preventive and educational rather than curative, although certain limited forms of treatment have been added. Supervision of the infant has extended to supervision of the pre-school child, partly by means of home visiting and medical consultations at the centre, and partly through day nurseries and nursery schools (first recognized under the Education Act, 1918); treatment of special defects has to some extent been provided for these children in connexion with the School Medical Service. The Children Act, 1908, now under amendment, superseded the Infant Life Protection Act, 1897, and the Adoption of Children Act, 1926, was intended to safeguard the future of the illegitimate or unwanted infant.

Maternal Welfare

Interest in the welfare of women was originally focused upon the industrial and social questions which it raised. Women were excluded from employment in mines and collieries in 1842. In the Factory Act of 1844 the first of numerous attempts was made to regulate the employment of women. In 1873 a report by Dr. Bridges and Mr. Holmes advised that mothers of young infants should either be temporarily excluded from employment or employed half-time; but the report of a Commission on the Factory and Workshops Acts in 1876 was unfavourable to legal restriction of the work of women before or after confinement. At an International Labour Conference convened by the German Emperor in 1890, various questions concerning women and children were discussed, and it was recommended that women should not be admitted to work for four weeks after childbirth; provision to this effect was included in the Factory Act of 1891, and still stands in the consolidating Act of 1901. The National Health Insurance Act of 1911 provided a cash maternity benefit for the wife of every insured man, and a double benefit to a married woman who is herself insured; sickness benefit during pregnancy is also available for the insured woman. The Washington Draft Convention, 1919, recommended six weeks' leave of absence with maintenance for insured women before and after confinement, but this Convention has not been ratified in Great Britain.*

* The Convention has been ratified in Germany for industrial and commercial workers but not domestic or agricultural employees. In practice it has proved difficult to enforce the six weeks' pre-natal rest, or to arrange periods for breast-feeding after the mother has returned to work.

The object of such legislation was clearly to safeguard the general health of women in industry, including married women, but no facilities were provided for medical supervision or for any special assistance on account of pregnancy. During the war the extensive employment of women in munition and engineering works, and in filling factories, led to a well-organized system of welfare supervision and careful observations of the effect of employment on the married and pregnant woman.

Consideration of the causes of infant mortality drew attention to the perils of pregnancy and childbirth, and the association of neo-natal infantile mortality with midwifery rather than paediatrics. The Maternity and Child Welfare Act has enabled local authorities to do much to improve the conditions of midwifery, and indeed to establish the nucleus of a general maternity service by offering facilities for ante-natal and post-natal care; by increasing the number of maternity beds available for the treatment of complicated cases of midwifery (including puerperal sepsis), for ante-natal observation, and for women whose home circumstances are unsuitable for a domiciliary confinement; by subsidizing, or establishing when necessary, a sufficient service of competent midwives (independent midwives, district nurses, municipal midwives, etc.); by offering the services of consultant obstetricians in difficult cases; by supplementing nutrition; by affording domestic assistance, etc. These powers, though wide, are optional, and they do not enable anything in the nature of a domiciliary medical midwifery service utilizing the general practitioner to be set up.

Meanwhile a fairly general opinion has grown up which holds that the normal confinement should be left as often as possible to a well-trained midwife, but that the midwife should not stand alone and should have the advantage of medical advice in the ante-natal and post-natal periods, even in normal cases, as well as be in a position to secure prompt medical aid in emergency. This view has led various bodies, including the Royal Commission on Health Insurance (1926), the Departmental Committee on the Training of Midwives, the British Medical Association, and the Maternal Mortality Committee, to recommend maternity schemes which provide the services of a midwife, and as far as necessary of a doctor, for every pregnant woman, in the hope that by guaranteeing skilled professional attention and by fixing responsibility, avoidable maternal morbidity might be substantially reduced. In view of the present financial circumstances, the Government has been compelled to postpone consideration of a scheme of this kind, and it is therefore imperative to make full use of existing powers under the Maternity and Child Welfare Act.

Future Progress

Although we owe much of the original incentive and inspiration to the observation and practical sense of voluntary workers, the application and expansion of their ideas to form an organized scheme for maternity and child welfare has devolved upon the Public Health Service, partly because it is necessary that the advantages should be open to every mother and every infant needing assistance; partly because the essence of the scheme was prevention of sickness through education and advice, and not treatment or charity; and partly because the administration of the large sums of money needed for systematic development could only be entrusted to public bodies. But the general foundations having been laid, we are now in a position to ask ourselves whether new and different problems are arising as a result of the experience gained, and, if so, how further development should be secured. The generally accepted conclusion is that future progress should not be wholly a matter of public health administration, but that closer co-operation with the medical practitioner is most desirable.

I suggest that there are two main issues upon which attention should be concentrated in foreshadowing the future progress of the maternity and child welfare service. The first is the safeguarding of maternity and the second is the health of the little child. Both are only partially dealt with under present schemes, and in both our knowledge of what should be done has outstripped our practice.

The Safeguarding of Maternity

The damage and waste of life associated with childbearing has often been stated. Yet even now, the extent of the mischief, with its annual toll of unnecessary deaths, and its infinitely larger burden of sickness and pain which has been estimated to affect not less than sixty thousand women every year, is seldom clearly realized.

The elimination of puerperal sepsis is perhaps the greatest problem in midwifery, and one which has attracted most attention during recent years. In 1918 there was a great shortage of maternity beds throughout the country, and from the first the Ministry encouraged local authorities to do what was practicable to remove this deficiency. But it was soon discovered that the risks of infection in a lying-in ward were by no means a thing of the past, and that acute sepsis was liable to arise without apparent cause, even in well-managed maternity hospitals. The impression was gained that these cases of unexplained sepsis usually occurred in hospital, but the investigations of the Maternal Mortality Committee have shown that they are equally, if not more, prevalent in domestic midwifery, and that 18 per cent. of 4,655 unselected maternal deaths were due to sepsis following normal labour.

Puerperal sepsis is known to be due, as a rule, to a haemolytic streptococcus ; recent researches have shown that the organism is generally introduced into the genital tract from without, and that a large number, possibly a majority of infections, are due to the transfer of organisms from the nose or throat of someone in attendance upon the mother, or occasionally from the throat of the woman herself. The possibility of droplet infection and the menace of the healthy carrier may account for the occurrence of sepsis in many cases which are otherwise inexplicable, and they also suggest that new precautions must be adopted in midwifery technique. The wearing of masks, at any rate in hospital practice and by doctors, has become a matter of great importance now that the risk of infection through carriers is realized. The use of gloves by all doctors is essential for safety ; midwives should be encouraged to use them more freely, and this is practicable if the gloves are sterilized on the hands as recommended in the Report of the Maternal Mortality Committee.

Although the need for maternity beds for complicated midwifery is now well recognized, provision for septic cases, including abortions, is still inadequate. Unless complete isolation can be secured, puerperal sepsis should not be nursed in connexion with a maternity department ; neither should potentially septic cases be introduced into the ordinary maternity wards. It is not sufficient, however, merely to transfer septic patients to a fever hospital or public assistance institution unless suitable arrangements are made for skilled medical and nursing treatment.

There is general agreement that the supervision of pregnancy is essential not only for the prevention of puerperal sepsis and other complications of midwifery, but for social reasons also. It is further agreed that this supervision should be carried out when possible by the patient's own doctor and midwife. Obvious questions which arise are how best to get in touch with the patient at the earliest moment, to overcome her objections to the necessary inquiries and examinations, and to induce her to take a common-sense view of ante-natal care without undue interest in her own mental and physical state or carelessness in noting unusual symptoms.

In certain countries—for example, Germany, Austria, and France—money grants, often very small, are available for the support of pregnant women and nursing mothers.* Such allowances are useful in encouraging the woman to make known her pregnancy at an early stage. In England there is no financial assistance beyond the maternity benefit, and therefore no direct incentive to disclose pregnancy. It is therefore important that women shall be made fully aware of the services which are offered in this country instead of money grants, and arrangements for voluntary notification of pregnancy seem worth trying, if only to make sure that the patient, her doctor, and her midwife are fully informed as to existing facilities. Nutrition during pregnancy almost certainly deserves more attention than it usually receives. The question of a balanced dietary, containing at least a minimum of vitamins and other essential substances, is a matter which those in charge of ante-natal clinics might explore with profit.

The pain of childbirth is, I suppose, the only form of acute pain which is not relieved as a matter of routine, and many demands have been made of late for the more general provision of anaesthesia in midwifery. Pain, in itself, can only be harmful to mind and body, and the fear of pain must often materially add to the distress and anxiety with which a woman contemplates her approaching confinement. If pain were a necessary concomitant of safe delivery one could only exhort the woman to take courage, but we know that relief can be given under suitable conditions and at appropriate stages. Research into methods of anaesthesia and analgesia is being carried on, and it is to be hoped that some satisfactory means of partial, if not complete, relief may be found for those women who desire it, which will be acceptable to the medical profession as a whole for use in domiciliary as well as in institutional practice.

The position of the private midwife is another matter for consideration. It is necessarily changing as maternity services develop. The midwife is no longer in her old independent and isolated position ; she must inevitably be drawn into the organization being formed for the protection of maternity. She is no less necessary than formerly ; indeed, she is often regarded as more important. But there is a growing opinion that she would do her work better and under more comfortable conditions if brought definitely within a municipal or nursing scheme, as indeed is already the case in country districts.

The Health of the Pre-school Child

The care of the child from 1 to 5 presents an entirely different problem from infant welfare. Once the baby has recovered from the risks of parturition, good mothercraft, under medical advice, is sufficient to overcome most of the perils of infancy. But when the child is weaned and begins to run about and to come in contact with a wider environment, new dangers arise with which the mother is not equipped to deal, and regular medical supervision becomes more necessary for the prevention as well as for the treatment of disease. With the baby, the chief desire is to prevent mortality ; with the little child, the danger of mortality recedes, but morbidity becomes more pressing. We have little exact information as to morbidity at this age because of the difficulty of ensuring any systematic supervision of children living at home, and we are not alone in this respect. The care of the little

* In Germany, either under the insurance scheme or through the municipality, most women are eligible for small weekly payments for four weeks before and six weeks after confinement, and for a nursing allowance up to the end of the twelfth week. Other benefits include the services of a midwife, and if necessary a doctor, or a grant towards hospital treatment.

child was recently considered by an international committee set up by the Health Organization of the League of Nations,* and it was found that in all countries concerned, statistical and medical information regarding this period was lacking. Even in countries which have done most towards improving the health of children generally, the pre-school child is still neglected, not so much because the importance for supervision at this age has escaped notice, but because of the practical difficulties involved.

The chief dangers to life which threaten the young child are the acute infectious diseases (including measles, whooping-cough, diphtheria, and scarlet fever), and respiratory ailments, such as pneumonia and bronchopneumonia. The younger the child the more likely are such illnesses to prove fatal or to have serious consequences. The object is therefore to endeavour to postpone the incidence of infection as late as possible, and to see that the child has effective medical and nursing attention if it contracts an infectious disease.

Effective protection from diphtheria can now be given by immunization, which can be practised safely and satisfactorily from the beginning of the second year, and the method is slowly gaining ground in this country. The prophylaxis of measles is more complicated and less certain, but something can be done, especially in the child under 5, to postpone or mitigate an attack by the use of serum obtained from convalescents or persons who have formerly suffered from the disease. Although the protection may be fleeting and uncertain, it is well worth attempting, as nearly all deaths from measles occur under 5. It is, however, most encouraging to note the steady fall in the death rate from this cause, which in 1911–15 was 1,110 per million living, and in 1926–30 was only 381. This marked fall synchronizes with the initiation and development of child welfare work in this country. Health visiting and advice given in the home or at the clinic have impressed upon mothers the importance of nursing and care in this disease.

Respiratory ailments, whether arising in connexion with epidemic diseases or as independent infections, are very prevalent, especially in the northern parts of the country. A clearer understanding on the part of the parents of the means of prevention, and better arrangements for nursing and treatment through the maternity and child welfare organization, might do much to reduce the gravity of these affections, which not only have serious immediate results but may prepare the way for other diseases.

There has been a substantial reduction in the death rate from tuberculosis in young children, especially in non-pulmonary tuberculosis. This welcome decline is no doubt due mainly to an improvement in nutrition, in the standard of living generally, and an increase in the use of pasteurized or dried milk for bottle-fed infants, in association with the special measures in the anti-tuberculosis campaign which are directed to eliminate or to minimize the risks of household infection. It is the improvement in environment which, apart from acute infections, will do most to lower morbidity among young children. The striking disappearance of severe rickets, for example, is a testimony to a better knowledge and practice of everyday hygiene, much of which is the result of the steady intensive educational work of the infant welfare staff. The importance of satisfactory nutrition in its immediate and remote results and in its effect upon general health and resistance to disease cannot be over-estimated, but the average mother is much less well informed as to the feeding of her little child than of her baby.

The welfare of the little child could, if seems, be further safeguarded by action which falls under three main heads. First, there is the need for protection from acute infection ; secondly, for a better knowledge of mothercraft as applied to the little child ; and thirdly, for continued supervision, which can best be given by regular home visits from trained nurses and periodical medical advice at a centre, together with such arrangements for the treatment of physical defects as can be made in co-operation with the medical profession, the school clinic, the orthopaedic centre, the children's hospital, etc., and of social defects through the day nursery or the nursery school.

We are all keenly alive to present-day difficulties, but, notwithstanding these, should not the care of women and little children be placed in the forefront of the health programme of to-day? Is it realized how comparatively small a sum is needed in a local area to provide for the gradual completion and perfecting of the existing organization? In any expansion of facilities there is likely to be an increasing scope for co-operation between the private practitioner and the public health officer. While the Public Health Service must almost necessarily remain the guiding force of maternity and child welfare schemes, it may confidently be anticipated that the family doctor will be willing to interest himself sufficiently in preventive medicine to study special problems which present themselves and to help in their solution.

* Report by the Reporting Committee on Maternal Welfare and the Hygiene of Infants and Children of Pre-School Age. C.H. 1060.

TEMPORARY CHANGES IN THE REFRACTION OF THE EYE IN DIABETICS*

BY

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My own especial interest in this subject was recently stimulated by two middle-aged patients who consulted me within six months of one another with the same story—namely, that distant objects had become indistinct, while print and needlework, for which glasses had previously been necessary, could now be distinguished more clearly and comfortably without aid. Neither patient was aware that there was anything amiss with her general health, but in each case these ocular symptoms prompted me to an investigation of the urine ; this revealed the presence of a large quantity of sugar, and so led to the discovery of a condition of advanced diabetes.

The occurrence of pronounced though transitory alterations in the refraction of the eye in diabetics has been reported sporadically in various medical publications, and a most illuminating paper on the subject was published by Duke-Elder in 1925. Apart from Foster Moore, however, who mentions it in his *Medical Ophthalmology*, writers of textbooks on ophthalmology, of textbooks on general medicine, and even of works dealing exclusively with diabetes, have usually ignored it. I have two reasons for bringing the matter forward: first, I wish to add my two cases to those already reported ; and, secondly, I believe it is important that this condition, although admittedly a rare one, should be more generally recognized, leading as it may do to the discovery of the existence of serious disease which otherwise might remain undetected.

My first case was a woman, aged 50, who told me she had been long-sighted until about a year before, and that her distant sight had failed fairly quickly, while the near sight had improved. She produced several pairs of glasses of different strengths, all minus lenses, which she had obtained during the past year ; none of these glasses had she ever worn with comfort. She also stated that her sight was

* Read in the Section of Ophthalmology at the Centenary Meeting of the British Medical Association, London, 1932.

variable, sometimes more blurred in the distance and sometimes less so.

An examination of the eyes revealed nothing abnormal; both lenses were clear, and the fundi looked healthy. Under homatropine three dioptres of myopia were present in each eye, and with the correction visual acuity was 6/6 in each. The patient was, of course, able to read perfectly without glasses. After the discovery that the urine was loaded with sugar she saw Dr. George Graham, who reported a blood sugar of 220 mg. per 100 c.cm., associated with a condition of extreme toxicity; in fact, she was on the verge of diabetic coma. Dr. Graham kept her in a nursing home for three weeks, during which time she rapidly improved under treatment with insulin. I saw the patient again some two months later, at which date, according to Dr. Graham's report, her blood sugar was normal. Myopia was still present, but had decreased to one dioptre in each eye; as I have not seen her since then I cannot say whether there has been a further decrease.

My second patient was a woman, aged 58, whose distant sight, which had previously been good, had been failing for six months, while her reading sight had correspondingly improved: she also gave a history of variability. Examination of the eyes showed clear lenses and normal fundi, with a myopic error of 1¼ dioptres in each eye and a visual acuity of 6/6 with a suitable correction. The urine was loaded with sugar. The patient was seen by Dr. Izod Bennett, who reported a blood sugar of 258 mg. per 100 c.cm. She was treated without insulin, and her blood sugar rapidly became normal on a suitable diet. A fortnight after her first visit all traces of myopia had disappeared: she has been seen several times since and has remained emmetropic.

Here, then, are two cases of transient myopia associated with diabetes, with an apparent relation between the degree of refractive error and the amount of sugar in the blood. It is true that diabetic patients not infrequently become myopic as the result of changes in the refractive indices of lenses which are becoming cataractous—the association of myopia with cataract is, of course, well known—but this variety of myopia is progressive, and would hardly be susceptible to treatment; besides which, in neither of my patients was there a trace of lens opacity.

Transient Myopia and Hypermetropia in Diabetes

The acquired refractive error in both cases was a myopic one, but the literature of these transient changes in refraction shows that this is by no means always the case; in fact, an acquired hypermetropia seems to be quite as common, and in a certain percentage of cases a temporary astigmatism accompanied the change in general refraction. The first case on record is one reported by Horner of Zürich in 1873, in which the observed error of refraction was a transient hypermetropia. Since then many other observers have reported a similar condition, and a certain amount of confusion seems to have resulted. Gould, who reported one case of transient myopia in 1907 and took the opportunity of reviewing the literature, suggested that in the hypermetropic cases a temporary loss of accommodation had been mistaken for an alteration in static refraction. Roberts, on the other hand, who in 1923 reported five cases of temporary hypermetropia, did not consider the possibility of the occurrence of myopia. A clue to the elucidation of this apparently contradictory state of affairs was first furnished by Westcott and Ellis, who reported a case of a diabetic patient in whom the transient changes in refraction varied between hypermetropia and myopia in different stages of the disease.

The real significance of these variations was, however, first demonstrated by Duke-Elder, who, in the paper already mentioned, reported three cases of sudden change of refraction. The first one was specially interesting from this point of view; the patient's blood sugar was estimated at intervals over a period of six months, and it was found that a myopic change accompanied the increase in blood sugar, while a hypermetropic change accompanied a decrease with almost mathematical precision. The second case showed a hypermetropia accompanying a decrease in blood sugar, and the third a myopia which developed with increasing blood sugar. He reviewed the whole of the literature, and was able to classify a total of 45 reported cases into four groups as follows: 14 cases of myopia coinciding with blood sugar increase; 16 cases of hypermetropia coinciding with blood sugar decrease; 8 cases showing both changes in refraction varying with the degree of blood sugar; 7 anomalous cases lacking sufficient data for classification. It seems clear, therefore, that the hypermetropia and myopia described by the different observers are merely an indication of a different phase of the same disease, the variation being associated with the changes in the blood sugar content.

Further light is thrown on this problem by a case recently described by Jensen, of a non-diabetic patient, a woman of 63, who went through a course of reducing treatment and who developed a transitory hypermetropia on three separate occasions, which apparently coincided with the elimination of carbohydrates from her diet. This patient's blood sugar was estimated on several occasions, and the fact that it was never above normal is used as an argument by Jensen in his assumption that the blood sugar is not the determining cause. He seems to lose sight of the fact, however, that though the patient's blood sugar, when tested, was never actually below normal limits, yet on each occasion it was definitely on the hypoglycaemic side, and I think it is reasonable to suppose that if it had been estimated more frequently it would probably have been found to be even more so when the diet was at its strictest. In fact, at these periods the blood sugar may quite likely have been less than normal. On the whole, then, I think this non-diabetic case of Jensen's supports Duke-Elder's view that hypermetropia coincides with hypoglycaemia and myopia with hyperglycaemia, and that the blood sugar concentration is probably closely associated with these variations in refraction, although, of course, not necessarily the determining cause.

Jensen also quotes two cases of transitory hypermetropia, reported by Gallus, who were suffering respectively from a disease of the liver and from a severe degree of tuberculosis with rapid emaciation, and in whom there was no demonstrable glycosuria or diabetes.

Causative Agency of Change in Refraction

The explanation of the physical basis of these phenomena is by no means simple. Horner, in common with the earlier observers, assumed that the change in refraction was due to a temporary diminution in the tension of the eyes, causing a decrease in length of the eyeballs and alterations in curvature of the cornea. Lundsgaard, however, who reported two cases of transient hypermetropia, showed that this assumption was erroneous; he took the tension with a Schiotz tonometer and examined the cornea with an ophthalmometer and found no change either in tension or curvature. It had also been suggested that the vitreous might temporarily become swollen, displacing the lens forward, but this assumption has also been shown to be incorrect.

The only possible explanation seems to be the occurrence of transient changes in the refractive index of the lens, depending on changes in the amount of fluid in the lens substance, and this is the conclusion arrived at by Duke-Elder, who discussed this question exhaustively, giving at least six considerations pointing to the lens as being the causative agency in the phenomenon. Strong evidence of this assumption is afforded by one of Elschnig's cases, a diabetic patient from one of whose eyes the lens had been removed for cataract. The character-

istic changes in refraction occurred only in the eye in which the lens was still present. Again it is impossible to explain the astigmatic changes on any other grounds.

With regard to the factors which are at the root of these changes in the index of refraction of the lens, the biochemical problems involved are of a highly complex nature. It seems to me that one cannot go further at present than to say that these lens changes are associated with changes in the water balance of the tissues of the body associated with changes in the blood sugar concentration, and that they cannot be explained by a mere difference in concentration of sugar or salts in the intraocular fluids. The cases on record have been mostly middle-aged people, but that age is not an essential factor is shown by the fact that the youngest patient reported was 14 and the oldest 74. A curious feature of the phenomenon is its rarity, but it must be remembered that even the commoner complications of diabetes, such as retinitis and cataract, are by no means invariably present.

SUMMARY

1. Transient myopic and hypermetropic changes in the refraction of the eyes occur in association with certain metabolic disturbances.

2. A remarkable relation seems to exist between those refractive changes and the blood sugar concentration.

3. The local cause of these variations in refraction is most probably a variability in the refractive index of the lens.

4. The underlying complex biochemical causes are still obscure.

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EXCRETORY BACILLURIA IN RELATION TO THE DIAGNOSIS OF RENAL TUBERCULOSIS

BY

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Notwithstanding modern differential staining methods, the biological test is still the best means of detecting the presence of tubercle bacilli in the urine. It is not infallible, but with careful technique the percentage of error is low and can often be attributed to concomitant circumstances rather than to failure of the test itself. A negative result may sometimes be found in early renal tuberculosis, when the organisms are few and their excretion periodic, or when the focus is closed. Occasionally, too, in a more advanced lesion, tubercle bacilli may fail to gain access to the urine owing to occlusion of the ureter on the affected side. Again, when the human type of organism is very attenuated and the resistance of the guinea-pig high, morbid changes may not become discernible in the animal during the period allowed for their development, especially if the duration of the test is much under six weeks. A positive result may sometimes be obtained by the inoculation of urine drawn off by catheter from the ureter of the apparently healthy kidney of a patient suffering from unilateral renal tuberculosis. This occurrence has been attributed to regurgitation of infective material from the bladder, to contamination of the ureteral catheter during its passage through the bladder, and to excretory bacilluria.

TUBERCLE BACILLURIA IN ABSENCE OF KIDNEY DISEASE

Some authorities assert that tubercle bacilli may be found in the urine when there is no lesion of the genito-urinary tract. They consider that the micro-organisms can be carried from a distant focus and excreted by healthy kidneys. The literature reveals a great lack of agreement as to this possibility.

Hübner,[4] discussing diagnosis, states that the value of the demonstration of tubercle bacilli microscopically, or by animal inoculation, is much overrated. He claims that the kidneys can transmit tubercle bacilli from some distant focus without being themselves involved. Hyman and Man,[5] in an article on the laboratory diagnosis of renal tuberculosis, review 126 cases. They consider the finding of tubercle bacilli in a catheter specimen of urine from the kidney or bladder no absolute proof of renal tuberculosis. They emphasize that the diagnosis must not rest on the recovery of the bacilli alone, but that pus or blood, even in microscopic amounts, should be found associated. Van Rijssel[9] also doubts the value of the guinea-pig test for the detection of tuberculosis of the urinary tract. He states that four kidneys removed on a diagnosis of tuberculosis by this method failed to show tubercle on microscopical examination. In two of the four instances the kidneys were normal, but the lungs showed a slight apical tuberculosis. In the remaining two benign renal tumours were present. Thomson-Walker[8] also supports the doctrine of excretory bacilluria, and insists that the presence of pyuria, haematuria, and other signs is essential to establish a diagnosis of actual disease. Romanis and Mitchiner[7] are of opinion that some patients who have phthisis, but whose kidneys are normal, can excrete tubercle bacilli in the urine. On the other hand, Boyd,[1] writing on this important subject, expresses himself in the following words:

"The question whether tubercle bacilli can be excreted by a healthy kidney has long been, and still is, a debatable one. Large lists of cases have been published showing that in pulmonary tuberculosis there may be an excretory bacilluria without any tuberculous lesions being discernible in the kidney. But everything depends on the thoroughness of the search for the lesions. Medlar,[6] in an important contribution on experimental renal tuberculosis, has shown that tuberculous lesions in the kidney could be found in every case in which there were tubercle bacilli in the urine. He has shown, moreover, that the number of bacilli in the urine bears no relation to the size of the lesions; that in many cases the lesions are microscopic; and that it may even be necessary to employ the method of serial sections. It would appear probable that the conception of an excretory bacilluria should be given up."

Bumpus and Thompson[2] take a similar view to Boyd. They believe that the presence of tubercle bacilli in the urine almost always indicates renal involvement. They do not think it possible for a normal kidney to filter tubercle bacilli from the blood stream into the urine.

A great deal of work has been, and still is being, done to try to clear up this question. Most people have concentrated on the correlation of the ante-mortem and post-mortem findings. Investigation along these lines is tedious and prolonged.

THE INVESTIGATION DESCRIBED

It seemed to the writer that the practical aspect of the question could be more easily settled by examining the urines of a series of patients suffering from fairly advanced pulmonary tuberculosis, but failing to reveal on careful examination and inquiry any signs or symptoms of genito-urinary involvement. Seventy-six patients having tubercle bacilli in their sputa, but showing no chemical or microscopical abnormality of the urine, were chosen. In addition to the phthisis, fourteen had dry pleurisy, two pleural effusion, one tuberculosis of the knee-joint, one tuberculosis of a rib, one tuberculosis of the larynx, one chronic otitis media, one silicosis, and one asbestosis. A specimen of urine from each patient was submitted to the guinea-pig test, the time allowed being six weeks.

Only one specimen produced discernible tuberculosis. As already indicated, this first sample of urine was otherwise normal, and there was an entire absence of albumin, blood, pus cells, and casts. There were no symptoms of kidney disease, and the *x*-ray showed no abnormal shadows in the renal regions. This patient, a man aged 30 years, gave a history of illness since March, 1931, but Dr. Stevenson, the medical superintendent of the sanatorium, considers that

the disease is probably of longer duration, for on February 2nd, 1932, the date of the reception of the first specimen of urine, this patient showed extensive disease of both lungs, with a good deal of fibrosis on the left side. His sputum is persistently positive, and contains numerous tubercle bacilli. He is not suffering from any of those complications which have already been enumerated. A second sample of urine from this patient, received on March 31st, also gave a positive biological test, but showed no other abnormality. A third sample, received on April 4th, gave a similar result. The organisms producing the tuberculosis were of the human type. They were recovered from the site of inoculation, and the direction of spread and the relation of the tuberculous lesions to the site of injection were sufficiently characteristic to exclude any possibility that they were due to spontaneous disease in the animal. The fact that the infection could be repeatedly induced by the urine of the same patient taken at different times is additional evidence in support of this contention.

At first it was thought that this patient afforded an example of true excretory bacilluria. It was not easy, however, to reconcile the repeated positive findings with this conception, except on the far-fetched assumption of an abnormal permeability of the renal epithelium and a persistence of the organism in the circulating blood of this man, which did not obtain in the other seventy-five individuals. Biological tests on the blood were negative. It was therefore decided to make repeated examinations of this patient's urine from time to time, in order to see if any evidence was forthcoming of actual renal involvement. Samples tested on May 7th, 10th, and 11th still failed to show any chemical or microscopical abnormality. A specimen examined on May 12th, however, showed a very faint trace of albumin with the Clapp-Cohen reagent (seven parts 10 per cent. phenol and one part of glycerin); all the other hitherto described methods gave negative results. Some granular and hyaline casts were also present on this occasion. On May 15th a very faint trace of albumin, some hyaline casts, and a few leucocytes were present, and on the following day there was an increase in the amount of albumin, and casts and leucocytes were still evident. Subsequent examinations revealed the presence of albumin by ordinary tests.

Discussion of Findings

The positive results obtained from this patient's urine cannot, in view of the subsequent findings, be attributed to uncomplicated excretory bacilluria. In fact, the sequence of events suggests that the presence of tubercle bacilli in the urine may often be the first sign of renal tuberculosis. The writer's experience agrees with that of Medlar, that the number of bacilli present bears no relation to the size of the lesion, for a great deal depends on the site of disease and the facility with which the organisms can gain access to the tubules. Consideration of the pathology of a tuberculous focus is sufficient to convince one that any extensive degree of haematuria or pyuria is a concomitant of very advanced disease, and is not often likely to occur in the early stages. The opinions of some eminent authorities of bygone days, that the presence of pus and blood in the urine is essential for the diagnosis of renal tuberculosis, can no longer be maintained. Chute,[3] several years ago, laid great stress on the slight urinary signs which may accompany early disease. These contentions are of more than academic interest, and anyone who excludes the possibility of renal tuberculosis simply on the absence of gross microscopical and chemical changes in the urine is likely at times to be misled.

Whether or not we attribute this one positive case to actual disease, it must be admitted that excretory bacilluria is a rare occurrence, and that in practice it is not likely to vitiate the value of the biological test in the diagnosis of renal tuberculosis. Moreover, it can be safely assumed that if it occurs so rarely amongst such advanced cases as those that have been under test in this investigation, it is still less likely to occur in those instances where early diagnosis is of value from the point of view of treatment.

Summary

Seventy-six patients were selected who suffered from advanced pulmonary tuberculosis, but who had no obvious signs or symptoms of genito-urinary involvement.

Their urines were tested biologically.

All the specimens were negative except one.

Tubercle bacilli were repeatedly present in the urine of this exception, and were of the human type.

The presence of the micro-organism was for a time the only abnormality, but other signs developed gradually in this urine, which suggested early renal tuberculosis.

No definite evidence of excretory bacilluria was found in this series of cases.

My thanks are due to Dr. W. D. Carruthers for his sanction to obtain the necessary material, and to Dr. J. Stevenson, medical superintendent of Prestwood Sanatorium, for his assistance in securing specimens from suitable patients, and for the thorough clinical notes which he placed at my disposal.

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Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

TWO CASES OF BOTULISM

We print below the separate accounts of two cases of botulism which resulted from the consumption of the same meal—a rabbit and pigeon broth. The patients, who were staying together in a house in Buckinghamshire, were affected at about the same interval after eating this food. Case I (Mrs. F.) returned to her home at Bedford, where treatment was undertaken by Mr. W. Gifford Nash, F.R.C.S., and where she subsequently made a complete recovery. Case II (Mrs. S.) was taken into the Radcliffe Infirmary, Oxford, and died shortly after admission. The case notes, by Mr. Gifford Nash and Dr. Piercy Fox, are self-explanatory.

Case I

(Mr. Gifford Nash)

Botulism is a rare disease in Great Britain according to Savage (*Medical Annual*, 1926, p. 185), who investigated 100 outbreaks of food poisoning in which only one was due to botulism. The rarity of the disease and the comparatively mild nature of this case must be my excuse for not at once recognizing it. There were some advantages in this, as it enabled me to watch and note the various symptoms, and also to obtain much valuable information concerning the source of the poisonous food. In Osler and McCrae's *System of Medicine* (vol. i, p. 233) is an excellent description of the disease, from which I gather that my patient had practically every symptom. The history and the presence of the symptoms were

gradually extracted from a very sick patient and pieced together.

Mrs. F., aged 68, consulted me on August 16th, 1932, on account of obstinate constipation of five days' duration, a feeling of heaviness in the abdomen, dryness of the mouth and inability to swallow anything but fluids. Her history was that, whilst staying in Buckinghamshire with a friend, Mrs. S., she partook of some broth at midday on August 10th. She drank about four tablespoonfuls of this, her friend taking a larger quantity. There was nothing peculiar in its taste. For supper they had some junket. The broth was made from the remains of a rabbit and a pigeon which had been given to Mrs. S. by a neighbour on August 4th. These had been cooked and partly eaten by Mrs. S. on August 5th. On August 10th some remarks were made about the ingredients of the broth, as the weather was very hot at the time, and Mrs. S. said they must be good, as they had been safely sealed down.

Mrs. F. first felt ill at 6 a.m. on August 11th, when she had abdominal pains and began, towards noon, to vomit, and had two or three loose motions. She felt very weak, and took no food. On August 12th she felt "very rotten," and on the 13th she returned to her home at Bedford, and went to bed, where she remained. On August 14th she was dizzy, saw double, and had difficulty in opening her eyes. Her bowels remained very constipated in spite of having enemata and various aperients. On August 20th a hypodermic injection of pituitrin and physostigmine, followed by a turpentine enema, produced an enormous result. After this, by taking two vegetable laxative tablets every night, followed by pituitrin injections, the bowels acted more regularly, and gradually the aperient was reduced to a nightly dose.

The difficulty of swallowing and the dry mouth gradually diminished, though they lasted for a month. The diplopia lasted only a few days, and the difficulty in opening the eyelids gradually passed away; but the pupils, which had been dilated and had failed to react to light, did not recover for six weeks. The pharynx was inflamed for about three weeks, and there was loss of taste, which still continues. For about two weeks the patient felt some weakness in passing urine, but there was no retention. There was great muscular weakness, and six weeks elapsed before she could leave her bed. The temperature and pulse were normal throughout the illness, and there was no interference with respirations. She was given a mixture containing strychnine and phosphoric acid, which she still takes. On August 20th she told me that her friend had died on the previous day, and it was this news that made me come to the conclusion I was dealing with a case of botulism. Ten days later I communicated with Dr. Stevens of Thame, and learned he had diagnosed her case as botulism.

I attribute the recovery of my patient to the fact that she had only taken a little of the broth, and that vomiting and diarrhoea had reduced the effect of the poison.

Case II

(Dr. E. Piercy Fox)

Mrs. S., aged 72, was admitted to the Radcliffe Infirmary on August 17th, 1932. Six days before admission, after partaking of a broth containing rabbit and pigeon, she had an attack of severe abdominal pain and vomiting. Her friend, who had a smaller portion of the broth, developed similar symptoms. The following day, five days before admission, there was ptosis of both eyelids. Two days before admission the parotid gland on the right side became swollen.

On admission the patient was somewhat sleepy, but did not seem very ill; temperature 98.8° F., pulse 80, respirations 20. There was a large swelling of the right parotid gland and marked ptosis of both eyelids, the right more than the left. The pupils did not react to light, the tongue was dry and furred, the mouth very dry, and there was difficulty in swallowing. The condition of the mouth and tongue, which was suggestive of a severe illness, was out of keeping with the general appearance of comparative well-being. There were no physical signs in the chest or abdomen. Reflexes were normal in the arms, the knee-jerk was present, ankle-jerks absent, and the plantar responses flexor. The day after admission the patient became drowsy; the following day this deepened to coma, and death occurred rather suddenly. The temperature rose to 103° and the pulse to 100 just before the end. The post-mortem examination did not reveal anything to account for death. Except for atheroma of the vessels in the circle of Willis the brain was normal.

The chief features were the rapid onset of gastro-intestinal symptoms after taking the broth, the constipation, the drowsiness, the dryness of the mouth, the difficulty in swallowing, and the third nerve lesion. The patient was sent into the hospital by Dr. Stevens of Thame, with a tentative diagnosis of botulism. This diagnosis was substantiated some days after death, when we received from Mr. Gifford Nash of Bedford an account of her friend's very similar illness.

The majority of cases recorded have been caused by tinned materials. This case is unusual in being caused by a broth.

My thanks are due to Dr. W. T. Collier for permission to publish details of this case.

GUMMA OF THE LUNG WITH UNUSUAL MODE OF ONSET

Gumma of the lung following acquired syphilis appears to be rarely encountered clinically. The more common form of syphilis of the lung is a gummatous ulcer of the trachea or a bronchus, leading in time to stenosis of the tube. Powell and Hartley (*Diseases of the Lungs*) state: "There can be little doubt that cases [gummata of lung] occur with greater frequency than is suspected," and then proceed to record a case in a man, aged 31 years, who had had syphilis two years previously. Fenton and Burrell (*Diseases of the Chest*) say: "Acquired syphilis of the lung is very uncommon and may take the form of well-defined gummata of irregular distribution, but with a general tendency to appear in the neighbourhood of the hilum. They show considerable vascularity. Generally the symptoms and physical signs are those of chronic pulmonary disease." They record a case, in a woman, in which post-mortem examination disclosed a gummatous mass behind the heart and partially obstructing the lumen of the left branch of the pulmonary artery.

The following case is recorded in view of its comparative rarity and its acute mode of onset.

The patient, a man aged 56 years, was taken ill with shivering, pain in the left side, and cough on the evening of May 5th, 1929. The history obtained was that he was quite well and at work until a few days before his present illness, which he described as "a bad cold." When I saw him the temperature was 102.6° F., pulse 90, respirations 34. Physical examination of the chest revealed mucous rales over both lungs, with, at the left base and axilla, diminished breath sounds and fine crepitations. In forty-eight hours evidence of consolidation in this area was marked. The sputum was tenacious and slightly bloodstained. For a week the general and local condition did not alter much; the temperature became remittent in character and the patient complained of a good deal of pain—worse at night—in the left side. At the end of three weeks, as the temperature still varied between 100° and 101° F., and the lung condition showed no signs of clearing up—in fact, the dullness became more absolute and extensive, and the nocturnal pain interfered with sleep—an exploratory needle was inserted with negative results. He still continued to bring up bloodstained sputum, and this was examined for tubercle bacilli, but none were found. He was then *x*-rayed, the report stating: "A deep shadow is visible over and around the region of the sixth rib. This shadow is due to tumour, probably malignant." The persistence of nocturnal pain suggested the possibility of the tumour being syphilitic, though the patient denied infection. A blood test, however, gave a positive Wassermann reaction. Before iodide had been administered, the skin in the anterior axillary region became red and boggy, and broke down. A small amount of pus escaped, followed by a larger quantity of typical gummatous material. The whole process rapidly cleared up under the administration of potassium iodide, and the patient was quite well in a few weeks.

Bournemouth. Vincent P. Norman, M.D., M.R.C.P.

British Medical Association

CLINICAL AND SCIENTIFIC PROCEEDINGS

KENSINGTON DIVISION

MEDICAL ASPECTS OF ABORTION

A meeting of the Kensington Division of the British Medical Association was held on November 15th, with Dr. CHRISTINE MURRELL in the chair, for a debate on the subject of abortion.

Dr. BINNIE DUNLOP said, in opening, that birth control had come to stay, but contraceptive methods occasionally failed or were carelessly used or were not adopted when they should have been, and therefore there was a growing demand that the control should be extended by relaxing the restrictions on medical practice with regard to terminating pregnancies. The present position as to artificial abortion was that medical practitioners were only free to terminate a pregnancy on medical grounds. People who advocated a relaxation of this restriction might be divided into three classes. There were, first of all, those moved by the distressing cases among poor, overburdened mothers. Social workers who had the confidence of mothers in the working classes were able to state that an appalling amount of abortion-mongering went on. What these reformers desired was that interruption of pregnancy should be allowed on serious economic grounds as it was now allowed on serious medical grounds. Their point of view would be met by making artificial abortion legal when the birth of another child would increase the insufficiency of food and other necessaries of the other children. It would be difficult, however, to draft a law on these lines. The second class consisted of the people who held that every woman had the right to decide for herself with regard to the continuance of a pregnancy; that was equivalent to advocating that medical practitioners should be completely free to perform abortion. The third class, among whom Dr. Dunlop numbered himself, considered that abortion should be legal for any woman who had had two children. The objection could hardly be made that this would encourage immorality. It would eliminate the almost constant fear of a failure in contraception, and do away with the irksome need to take extra precautions because of the absence of any second line of defence. His proposal would eliminate the danger that a large number of eugenically efficient people might decide to have too few children in case the uncertainty of contraception should result in their having too many. It would more definitely check the multiplication of the least efficient citizens, and prevent the increasing financial burden which this imposed upon others. Abortion performed by a skilled person in a hospital was, as Russian experience was showing, about as safe as confinement.

Dame LOUISE MCILROY said that as the law stood to-day abortion was an illegal operation, but a certain amount of licence was given to the profession in order to save the life of the woman, and she thought this had been broadened of recent years to prevent grave injury to her health. Anything else came on the ethical side. She begged the meeting to consider the whole question from the serious and responsible position of the medical profession. Anything which members of the medical profession said went out into the world as an expert opinion. Not much was heard to-day about birth control: in every country it had been a failure among the hospital class. Therefore this question had been brought up as an alternative to birth control, and the result was these various discussions on abortion and sterilization. They had been to some extent inspired by little excursions which certain members of the profession had made to Russia. God forbid that in this country the medical profession should do what the Russian medical profession was now doing—that is to say, producing abortion in people who had not the slightest medical condition to justify it. One of the chief reasons why Russia had legalized abortion was that pregnancy, of course, curtailed a woman's labour for the State; another reason was that marriage had been given up in that country. Notwithstanding the optimistic figures which were sometimes quoted, she frankly disbelieved that wholesale abortion as practised in Russia could go on without any serious septic sequelae. If Dr. Dunlop had spent years in obstetrics as she had done he would not talk so glibly of how easy it was to induce abortion. Their one concern in modern obstetrics was to avoid the induction of abortion, which was a confession of failure. With the special research and treatment now available, abortion was very rarely induced, even in cases of tuberculosis and heart disease. It was carried out sometimes in cases of chronic kidney disease, but never without the most minute examination. Not infrequently abortion made tuberculous women very much worse, and she had known it bring on a very bad haemoptysis. The law as it stood at present was a great safeguard to the practitioner when relatives tried to press him to perform such an operation. He could say that the law did not allow it except on medical grounds, and that the medical grounds were not sufficient. She added that she had seen so much of the joys of motherhood and so many tragedies in women who could not have these children that she could not bring herself to subscribe to the easy-going views put forward in some quarters. Moreover, did it never occur to them that the ovum had an endocrine function—a temporary one, it was true—and that if it were taken suddenly away there must be some pathological repercussion, some upset of physiological balance somewhere? It all seemed to her against their teaching in medicine, apart from any moral point of view, and instead of freeing women from sexual slavery by these methods, it would only intensify the trouble. She hoped the profession would maintain its traditional position, and would not be dictated to by people who knew little or nothing about the physiology of the reproductive function.

Dr. C. KILLICK MILLARD remarked that he was not very sure as to his own views on this question; but they all must be impressed by the hardship entailed upon married women who had large families of children, more than they could probably bring up, and they all knew to what desperate straits these poor women were reduced. In spite of severe penalties, illicit or criminal abortion was still common, and brought about grave injury to health. It was this injury to health which made him, as a medical officer of health, wonder whether any modification of the law was desirable whereby abortion might be carried out under recognized conditions of reasonable safety. Whilst not oblivious to the religious and ethical point of view, he felt that the State was only justified in interfering with the rights of the individual, provided it was in the interests of the State that it should do so; in other words, the State ought not to interfere with the rights of the subject because of certain views which were based on dogmatic religion. It had been held hitherto that only medical grounds could make the thing lawful. It was very difficult to say what did constitute lawful grounds. There might be a tribunal established, a court of summary jurisdiction meeting in special session, whose function it would be to consider applications, and other than medical grounds would be taken into consideration—for example, the number of children already in the family, the family circumstances, and eugenic factors. One point in favour of the Russian system was that the doctors were salaried officials, receiving nothing extra for this operation, and it was to their interest to discourage a woman coming again. He sympathized with Dame Louise McIlroy in what she had said about Russia, but he felt that they ought to study Russia, which was a unique experiment. Russia had one great advantage—it was not, like ourselves, tied down by tradition. In this country he thought the penalties for abortion were preposterously severe. Moreover, if the woman died, the law called it murder, which was a legal quibble, because it was not murder at all, the person concerned being most anxious that the woman should live. He had great sympathy with the idea that a woman should have some right to say whether she should become a mother or not; certainly it concerned her far more than anyone else. He felt that the name "abortion" was unfortunate. If it had some other name it might be more acceptable to certain minds. For example, "suicide" had a very dis-

agreeable connotation, but if it were called " euthanasia " it went down at once.

Dr. F. J. McCann said that Dr. Dunlop had suggested the legalization of abortion after a woman had had two children. Did he know that the proportion of children per married couple in this country was 2.2, and that three at least were required to maintain the population? There were four reasons why abortion had come more prominently before the public. One was the general lowering of moral standards. Another was the spread of information on birth control, followed by the failure of contraceptive methods. The third was the assertion or assumption that abortion was free from danger. As to that, he thought that if the truth were known about the Russian cases it would open many eyes. Then it was said that abortion should be procured only within the first three months. Why, if abortion was right, was it not right up to any time before the child was viable? If abortion were legalized, one could not logically indict infanticide, and if one legalized infanticide, one might as well legalize the lethal chamber, and that was a return to pagan methods. Dr. McCann produced some figures illustrating the position in Russia, which in his view was very different from that which was claimed by the abortion propagandists. Dr. H. H. Sanguinetti thought that it was right to stress the moral side of the question. He thought it a mistake to say that because, for example, the sale of drink took place during non-permitted hours, or there was widespread evasion of the gambling laws, therefore what was at present illegal should be legalized ; and the same thing applied to abortion.

Dr. Letitia Fairfield said that she was not quite so frightened about what came out of Russia as some other people. But she simply did not believe in these 50,000 women on whom abortion had been carried out in that country without a single disastrous result. A friend of hers, very sympathetic to the Russian spirit, visited a hospital there where abortion was practised, and found women, not under an anaesthetic, being curetted " with a cheerful vigour " that could be heard in the next room. Admittedly the women were of Slavonic origin and possibly their reflexes were less sensitive than our own, but it was difficult to suppose that there were not frequent disasters. In Russia, State abortion had not resulted in the diminution, but in the enormous increase, of abortions outside State control, and of these, of course, no statistics were available. As to the argument that a woman should have the absolute right to say whether she should become a mother or not, she felt, though a feminist herself, that this was feminism run mad. Was it to be claimed that the father had no voice in the matter at all? It might be degrading to a woman to be subject to her husband in this matter, but was it not infinitely more degrading that a woman should be subject to a board of licensing magistrates? The hardest case was that of the unmarried girl, and it would be very difficult to get any Act passed which would include those cases and yet not give encouragement to an ugly side of life.

Dr. Alexander Baldie remarked that on the ethical and political side the issues were so involved that it would be very inexpedient for the British Medical Association to put forward any views as to the desirability or otherwise of a change in the law. But on the medical side he thought the profession could be of assistance. It could submit four categories of cases in which abortion at present was certainly practised. These were: (1) the imperative class, in which abortion must be applied to save life ; (2) the recommended group ; (3) the permissive group ; (4) the prohibited group, which last would include the cases which came forward on the ground of social expediency. It might help the politicians and the lawyers if they understood clearly that such groups of cases existed. Dr. A. Benjamin asked on what grounds Dame Louise McIlroy had stated that birth control was a failure. He thought the average of success in the birth control clinics was very high. The case was simply that the great majority of the poor people did not know how to exercise birth control. He thought there was a distinct difference between operation before the foetus was viable and infanticide. The propagandists of abortion did not maintain, he thought, that it should be done at so late a stage.

Dr. George Pollock (chairman of the Wandsworth Division) said that his views, like those of Dr. Killick Millard, were not definitely crystallized, but he paid a good deal of attention to the emphatic declaration of one who must be recognized as an authority on the legal aspect of the question—namely, Mr. Justice McCardie, who had stated that the law on abortion ought to be modified. He did not know that he would go all the way with Dr. Dunlop, but he felt that political prejudice against Russia was warping the judgement. In some further conversational discussion various ethical conundrums were posed, and cases, actual or hypothetical, were cited, and discussion also took place on the question as to how far over-population was responsible for the evils of unemployment. Dr. Christine Murrell, from the chair, referred to the racial aspect of the question. The intrauterine influence of the general maternal organism was very important, and she believed that the psychology of the infant was supposed to be affected by it. She had in mind the unfortunate condition of those children who managed to get born after many ineffective attempts at abortion had been made.

Dame Louise McIlroy, in replying, admitted frankly that a certain amount of prejudice with regard to Russia had affected her. While she took a stand as an obstetrician against this entire movement, she was illogical enough to make an exception in the case of females pregnant as a result of criminal assault, and also in those not infrequent cases where young girls just after reaching puberty were the victims of incest. Dr. Dunlop, also in replying, expressed scepticism about the Russian figures. With regard to the period at which abortion should be done, his only reason for suggestion that it should be done during the first three months was that he had always understood that it was safer in the earlier period.

Reports of Societies

CHRONIC PYURIA IN CHILDREN

At the meeting of the West London Medico-Chirurgical Society, on November 4th, with the President, Dr. Julius Burnford, in the chair, a paper was read by Mr. O. L. Addison on chronic pyuria in children and its investigation.

Mr. Addison said that the seriousness of chronic pyuria had been recognized for many years, but it was safe to say that until modern methods of investigation came into use an accurate diagnosis of its cause was seldom made before a post-mortem examination. The first great advance in diagnosis was made ten or twelve years ago, when the introduction of sodium bromide and sodium iodide rendered pyelography a safe procedure. Before that time pyelography in adults was carried out by means of solution of collargol or thorium nitrate, the patient's sensations being used as a rough guide to the amount of the solution required to fill the pelvis. Many cases of serious injury were recorded. The second great advance, also made within the last few years, had resulted from the improvement in cystoscopes and ureteric catheters. Only recently a single catheterizing cystoscope had been made small enough for use in the case of boys of 3 years of age. The most recent advance, and in many ways the most valuable of all, had been the introduction within the last two years of intravenous or excretion pyelography by means of uroselectan, abrodil, and lately uroselectan B. By the use of sodium iodide for cystograms and for pyelograms carried out by a ureteric catheter, and uroselectan B for intravenous pyelography, it was nearly always possible to obtain an accurate photograph of any part of the whole of the urinary tract. The drug now most generally in use was uroselectan B, which was given intravenously—not always an easy matter in small children. A safe dosage was 1½ c.cm. for each year of age. A series of photographs at intervals up to half an hour must be taken, and the first must be within two minutes of the introduction of the drug. He had seen no harmful results, except in the case of one child who had scarcely any functional kidney tissue left. For

estimating the value of kidney function he relied chiefly on the blood urea content and on the urea concentration test. The most frequent cause of chronic pyuria in childhood was congenital malformation of the urinary tract. Abnormalities of the tract were of very great variety, and might affect any part of it. They were not all necessarily accompanied by infection, but there was no question that all malformations predisposed to it. The immediate predisposing cause of pyuria in all congenital malformations was stagnation in some part of the urinary tract, whether due to a stricture or to some defect of the neuro-muscular mechanism, and it seemed that the lower down in the tract the obstruction occurred the earlier was the onset of infection. It was not uncommon to find more than one obstruction present—for instance, an obstruction of the urethra and a stricture of one ureter. Obstructions at the pelvi-ureteric junction, whether due to congenital stricture, kinking from an aberrant vessel, or other cause, led primarily to dilatation of the pelvis, and gave rise to hydronephrosis, either closed or intermittent. Dilatation of the ureter might be unilateral or double, and was always associated with dilatation of the corresponding kidney. These dilated ureters, as he showed by lantern slides, were often of very large size, and where only one was enlarged the cause was nearly always a congenital stricture or atresia. Dilatation of a ureter due to an impacted stone was unusual, and seldom reached any great size. Dilatation of both ureters was very commonly secondary to an obstruction in the urethra, and in this case was practically confined to the male sex. Congenital valvular obstruction of the urethra was a not uncommon cause of chronic pyuria. The valve was nearly always formed in connexion with the lower end of the verumontanum, and might be single or double. Occasionally a diaphragm had been found about the membranous urethra, and this had been the cause in the few recorded cases in girls. The valve acted in the same way as the valve in a vein, and offered no resistance to the passage of an instrument. Usually these patients died from uraemia in infancy, but if the obstruction was not of a severe grade, they might go on to adolescence, or even adult life, though all, if unrelieved, ultimately died of uraemia from the effect of infection and back pressure on the kidneys. Only by getting these various cases early —before the kidneys were hopelessly damaged—could one hope for any satisfactory result of treatment.

Mr. H. P. WINSBURY-WHITE said that in seeking the cause of infection of the urinary tract in children it was well to bear in mind three possibilities: that it might be infection secondary to some pre-existing condition in the tract (the dilatation group being the most important, though stone also had to be considered); that renal infection might be secondary to a focus in some other part of the body outside the genito-urinary system (the infection being through the blood stream); and also that there might be infection starting in the lower urinary tract or the genitals. In making the diagnosis, he strongly favoured the intravenous method. With the instrumental pyelographic method used previously there was often some stirring up of existing infection, which did not occur with the intravenous method. Cases of dilatation were practically only seen when they had developed infection, and once infection had supervened it might be regarded as a fixture, though it would vary in severity. He had known several cases in which the infection had come on after some respiratory or gastro-intestinal infection. Haematuria was not an uncommon symptom in these cases, and he believed it was simply another manifestation of infection.

Mr. H. L. ATTWATER said that with regard to the dye test, he personally relied on the urea concentration and the blood urea. Indigo carmine was not of very much value simply as an excretory test, but it was useful on watching efflux from the kidneys by the cystoscope, when gross delay or failure to appear on one side indicated lack of function of the kidney. Mr. NEIL SINCLAIR said that anyone who had to deal with children's clinics should bear in mind the frequency with which the urinary tract in children was infected. Mr. G. O. CHAMBERS mentioned the possibility of foreign bodies in the bladder, especially in young girls at about the age of puberty.

ASEPTIC PHLEBITIS

At a meeting of the Pathological Society of Manchester on November 9th, Mr. PETER G. MCEVEDY, in a communication on aseptic phlebitis, distinguished "phlebitis from effort" and "chemical phlebitis." A thrombophlebitis in one of the large veins might follow unusual exertion. It might occur in the lower limbs, more commonly in the left side, or even in the inferior vena cava. It was commonest in the axillary vein, especially the right, and usually in young males. Fifty-odd cases of this condition had been reported, and the speaker had seen three. Thrombosis of the axillary vein followed some unusual exertion, generally with the arm abducted. The diagnosis was fairly easy, but many cases had been diagnosed as intrathoracic neoplasms. Injection of uroselectan into the forearm vein and *x*-ray photography, which demonstrated the collateral circulation, helped in doubtful cases. The condition was generally thought to be a thrombosis of the axillary vein following trauma to the vein wall at the level of the subclavius muscle. The marked blueness of the whole arm and the swelling, both of which might last several weeks, suggested an extensive thrombosis, with some involvement of the surrounding lymphatics, and was not what one would expect from a local trauma. The possible influence of a septic focus had to be considered. Treatment was by gentle exercise and massage, but the patient would most likely be unfit for work for a few weeks.

Discussing chemical phlebitis, Mr. McEvedy said that the basis of the modern treatment for varicose veins was to set up an endophlebitis by causing damage to the intima of the vein wall, usually by anti-coagulants. This chemical phlebitis differed in many ways from septic phlebitis. It remained limited to the superficial veins; the clot was firmly adherent and there were no constitutional symptoms. Septic phlebitis was apt to spread to the deep veins, the clot was not firmly adherent to the vein wall, and constitutional symptoms might be marked. These differences accounted for the danger of pulmonary embolism in septic phlebitis, and explained why a septic phlebitis should be treated like other septic conditions—namely, by rest—and why the treatment of aseptic phlebitis should be ambulatory. Pulmonary embolism following the injection treatment of varicose veins had been reported in twenty-four cases. It had generally been due to using unsuitable solutions, injecting veins while the patient was recovering from some operation, and keeping the patient in bed following injection treatment.

The Zondek-Aschheim Test

Dr. G. S. SMITH read a paper on the Zondek-Aschheim reaction in pregnancy. The history of the test was briefly reviewed and a description given of the original Zondek-Aschheim technique and of the modified Friedman technique in which rabbits were used instead of mice. The results gathered from many different laboratories were compared, and evidence was adduced to show that the test using the rabbits had several advantages over the original test, the special points in its favour being the rapidity with which a result could be obtained and the absence of a single reported false positive.

At the November meeting of the Paddington Medical Society Dr. ERNEST JONES, in an address on "The significance of psycho-analysis in modern medicine," said that it enlarged the field of medicine in two ways. It gave physicians the ability to understand and cope with a large number of conditions in the presence of which they had previously been helpless, and it had extended the field of therapeutics to a large number of conditions, such as marital incompatibility. He discussed three ways in which the occurrence of physical disease produced a mental situation which tended to evoke any neurotic elements present, through (1) frustration, (2) fear, and (3) suffering. The stress laid by psycho-analysis on the dynamic factors in disease was in accord with the functional attitude in modern medicine, just as the stress it laid on the instinctual origin of mental conflict was in accord with biological principles.

Reviews

PSYCHOTHERAPY

Psychotherapy : Its Nature, its Assumptions, its Limitations[1] is a translation from the German of a comprehensive monograph by Dr. Hans Prinzhorn, whose contributions to psychotherapeutic practice and theory, though little known in this country, have attracted considerable attention abroad. This book is so full of ideas and fresh points of view that it requires—and, we feel, merits—concentrated study. The author states that "the psychosomatically unified actuality of the human being may be defined as the object of all medical activities," and his book may be described as an elaboration of this thesis. Perhaps all good physicians can be said to practise the science and art of medicine in accordance with this general principle, though they may be unconscious of the "minor psychotherapy" which is implicit in their approach to the sick person. As regards the future, however, what is required is the fundamentals of psychosomatic unity and psychotherapy for all medical men—and here the problem of medical education is clearly involved—and highly developed specialization, as in surgery, for the few. Dr. Prinzhorn holds the view that the principal problem of psychotherapy is—*the therapist :*

> "Anyone who, speaking as an expert, maintains that personal gifts and aptitudes play no part here, speaks against better knowledge, darkens counsel for the uninitiated, and encourages the irresponsible experimenting of those who, unsure of themselves, love nothing better than, with their analysing, to play the vampire to other minds. On the contrary, there is in fact a specific psychotherapeutic gift which is exceedingly rare."

Thus the author makes it clear that he regards psychotherapy as a very "high calling," and there would seem to be no reason to dissent from this view. A rigid training is here clearly called for in order to "eliminate the unfit." Dr. Prinzhorn speaks frankly on the limitations of psychotherapy—as, indeed, he can scarcely fail to do as a firm believer in the doctrine of psychosomatic unity. The view is expressed that the limits of psychotherapy are narrow, owing to the unalterable character basis which is the chief factor of every neurosis. Thus the problem of individual "substance," inheritance, constitution, character, must be a matter for consideration in every case. How far is the patient unequivocally determined, as to his disposition, by inheritance, and how far, on the other hand, does he possess freedom of development? There are psychopaths who, in spite of all attempts to help them, remain practically as far from the idea of general health as they were at the start. Dr. Prinzhorn maintains that these are, above all, the sufferers from those neurotic disturbances the treatment of which is the task of the psychotherapeutist. We have a similar problem in general medicine, where relief rather than recovery is all that can be attained in many forms of illness. In the case of psychopaths there can never be any talk of *health* in the biological sense—as "the free equilibrium of all functions proper to the species"—but only in the sense of social adaptation or of personal optimum.

In this book psychotherapy is expounded with a refreshing breadth of view, and the author has been successful in depicting mental treatment as a world development which is finding expression, not only in medicine, but also in religion, education, and sociology. The English translation has the advantage of a helpful introduction from the pen of Dr. Crookshank.

[1] *Psychotherapy : Its Nature, its Assumptions, its Limitations : A Search for Essentials.* By Hans Prinzhorn, Ph.D., M.D. Translated and edited, in collaboration with the author, by Arnold Eiloart, B.Sc., Ph.D., with an introduction by F. G. Crookshank, M.D., F.R.C.P. London: J. Cape. 1932. (Pp. 352 ; 4 figures. 18s. net.)

PUBLIC HEALTH IN BRITAIN

Medical officers of health and members of local authorities in this country have from time to time within recent years been called upon to take part in the introduction of measures calculated to alter or subvert previously existing public health arrangements. Some of these workers, it may be, have resented the changes as a needless intrusion into settled routine, and others, possibly, have acclaimed the innovations as a panacea for the ills of the time ; but most of them, maintaining a more or less open mind, have soberly proceeded to set schemes in operation for giving the new proposals a fair trial. In order to acquire that balance of judgement on public health questions which enables its possessor to keep a middle course between misgiving and too buoyant hopes, there can be no better way than to study the events through which the health services of Britain attained to their present stage of development. While the study of historical principles in the political and religious spheres will often present a formidable task on account of the long periods covered, in the case of public health history the demand on the inquirer is happily less exacting. The whole course of public health evolution in this country is for practical purposes comprised within the modest range of one hundred years, and is in consequence not difficult to grasp if presented in a suitable form. A work which complies with this condition in a reasonably adequate manner has been issued by Dr. Harley Williams,[2] who sets forth the story of public health in Britain from 1832 to 1929.

Beginning with the Poor Law Amendment Act of 1834, the author carries the reader on through Chadwick's struggle to the Public Health Act of 1875, the rise of county administration, the assault on the Poor Law, and, finally, the Local Government Act of 1929, the last of which he describes as the fusion of various tendencies of social medicine during the previous century. He notes the inception of the national health insurance scheme, paying tribute to the British Medical Association as an agency which impressed a remarkable degree of unity into phases of medical politics where opinion seemed hopelessly divided. He devotes a chapter to the medical service of the Highlands of Scotland which is establishing for the most outlying islands services, including specialist surgery, previously undreamt of. The rise and progress of the fever hospitals is succinctly presented, and the establishment of international hygiene receives a brief notice. The development of anti-tuberculosis measures is followed from Koch and Laennec to the founding of the tuberculosis dispensary by Sir R. W. Philip, the impulse of the National Health Insurance Act of 1911 which made funds available for sanatoriums, and, lastly, further developments such as Papworth and Preston Hall. The significance of bovine tuberculosis and the related problem of the milk supply are passed in review. Subsequent sections deal with maternity and child welfare, venereal disease, and small-pox, and the volume concludes with articles on Chadwick, Simon, Florence Nightingale, Sir Francis Galton, and Lord Shaftesbury. It is expected by Professor Jameson, who writes an introductory note, that Dr. Harley Williams's book will be read with pleasure and profit by all students of social medicine. In this anticipation we concur.

[2] *A Century of Public Health in Britain, 1832–1929.* By J. H. Harley Williams, M.D., D.P.H. With a foreword by W. W. Jameson, M.D., F.R.C.P. London: A. and C. Black, Ltd. 1932. (Pp. xv + 314. 7s. 6d. net.)

THE LYMPHATIC SYSTEM

In *Anatomie des Lymphatiques de l'Homme*[3]—a large royal octavo volume of 489 pages with 129 illustrations—Professor H. Rouvière of the University of Paris furnishes us with, we believe, the most complete and precise account yet published of this most important system. The book may be regarded as an extension—a notable extension—of Cunéo's volume on the subject in Poirier's *Anatomie*, the text being arranged along similar lines, many of the illustrations being repeated, others considerably improved and supplemented.

The various passages occurring in the system are divided into lymphatic spaces, such as are found in the cornea and possibly in the interior of nerves; perivascular lymph sheaths, as in the central nervous system; and true lymphatic networks and vessels, as in the body generally, the placenta alone apparently sharing in none of these things. The glandular elements of the system are divided into true glands and *nodules intercalaires*. Among various interesting questions discussed are whether, in the aged, lymph glands actually disappear or merely undergo a process of more or less complete involution, being able to restore themselves to their former size and importance in case of infection. Other matters of interest are the rarity with which superficial and deep lymphatics anastomose, and the possibility of lymphatic vessels, either before or after passing through lymph glands, opening into the venous system independently of the main collecting lymph trunks, as appears to be the case in the dog. In the introductory chapter, and as opportunity provides throughout the book, attention is drawn to the many matters still requiring complete elucidation, as, for example, the exact relationship of the lymphatic vessels of the olfactory mucous membrane to the subarachnoid space, the origin, circulation, and drainage of the aqueous humour of the eye, and of the endolymph and perilymph of the internal ear. The student of these and other questions will find considerable help from the bibliography at the end of the volume, with no fewer than 768 references, beginning with the noteworthy dissertation on the lacteals by Asellius in 1627.

Particular attention throughout is paid to those regions and organs which possess special interest for the clinician, and due mention is made of such variations as occasionally occur in the course of the vessels and in the situation of the glands. No review of the work could be anything but grossly inadequate which did not refer in the highest terms to the uniform excellence of the illustrations. The book—the outcome, so Professor Rouvière tells us, of many years' labour on the part of himself and his assistants, who, in addition to initiating work of their own, have closely examined the results of other workers—is likely to be, both now and for many years to come, the standard work of reference on the subject.

NUTRITION AND THE CHILD

One of the results of President Hoover's White House Conference on Child Health and Protection has been the appearance of a volume[4] dealing, ostensibly, with child nutrition. It is obvious that a great deal of labour has been put into its production, and the authors—there are thirty-one of them—very rightly decided to "make a job of it," and to deal on broad lines each with his particular subject. As a result, although the child receives quite adequate notice, the book is really a general symposium on nutrition. The sections—almost every aspect of nutrition and every important foodstuff is considered—are in general admirable both in plan and in execution. They presuppose that the reader possesses an adequate scientific training and is used to reading matter which is logically presented without elaborate explanation; on the other hand, it is not a book written purely for the medical man, though many medical men would find its contents both helpful and interesting. The layman with no scientific training would, however, find it difficult to make very much headway.

It is rather hard to find fault with a book that is, in general, so admirable; moreover, everyone knows that publication, especially of a work in which many authors collaborate, takes time. It would not, therefore, be surprising if some of the newest developments in nutritional science were omitted. Considerations like these, however, cannot excuse the fact that several pages are given to an account of the chemistry of muscle which puts the matter in an entirely wrong light. The work of Lundsgaard, which was published in 1930, has very largely changed the whole perspective of the picture. Old observations still stand, but the discovery of new facts has altered their significance. Yet the account given in the present work draws the picture as it would have been drawn two years ago—indeed, it reads remarkably like a condensed form of a well-known review which appeared at least seven years ago. As a matter of fact, a discussion of the chemistry of muscle has no more to do with the nutrition of the child than with that of the adult. The author's justification for including it was, clearly, to ensure that his reader had grasped certain fundamental facts: surely it is all the more incumbent on him to see that the facts are correctly presented.

In general, the various sections are admirably balanced, and furnish a plain account of the more important facts and figures, together with deductions that may reasonably be drawn from them. There is no suggestion either of philanthropic propaganda or of sentimentalism, in spite of the fact that the inside of the cover and the fly-leaf are embellished with an outline map of the U.S.A. in various parts of which "Young America" disports itself.

ACTIONS OF DRUGS

Materia Medica, Pharmacology, Therapeutics, and Prescription Writing, by Dr. W. A. Bastedo, is the third edition[5] of this textbook, former editions of which appeared in 1913 and 1918. It is based on the author's lecture notes, and the general aim is to present a reasoned account of those properties of drugs which are of chief importance in the practice of medicine. The author has special qualifications for this task, since he has experience of teaching and research in both pharmacology and medicine. Each group of drugs is considered in turn. Their chemical properties and pharmacological actions are described briefly, whilst attention is directed chiefly to their clinical effects—that is to say, to the actions they exert upon diseased human beings. The toxic effects produced by overdosage are described with particular care, and the author gives numerous illustrations of drug rashes. Controversial questions are dealt with briefly, and chief attention is paid to established facts of practical importance.

The value of a textbook of this type depends in the main on two points: first, whether it presents up-to-date information; and secondly, whether the author has shown good judgement in the selection of his material. The

[3] *Anatomie des Lymphatiques de l'Homme*. By Professor H. Rouvière. Paris: Masson et Cie. 1932. (Pp. viii + 489. Paper, 130 fr.; bound, 150 fr.)

[4] *Growth and Development of the Child. Part III, Nutrition*. Report of the Committee on Growth and Development. White House Conference on Child Health and Protection. New York: The Century Company; London: D. Appleton and Co. 1932. (Pp. xx + 532. 18s. net.)

[5] *Materia Medica, Pharmacology, Therapeutics, and Prescription Writing. For Students and Practitioners*. By Walter A. Bastedo, Ph.G., M.D., Sc.D., F.A.C.P. Third edition, reset. Philadelphia and London: W. B. Saunders Company. 1932. (Pp. 739; 80 figures. 32s. 6d. net.)

volume satisfies both these tests, for the new edition has evidently been rewritten throughout, and the author presents a very complete account of the action of all drugs that are of serious therapeutic importance and yet keeps the size of his volume within reasonable limits. The chapter on digitalis deserves special mention, as it gives a very fully illustrated account of the action of this drug in cardiac disease.

The extent to which references to literature should be provided in textbooks is always a difficult problem. Full bibliographies are obviously impossible, but in the volume under review only the names are given of the authorities whose work is quoted. It would appear to be more satisfactory to mention at least the date of the work to which reference is made, since this would permit those interested to turn up the original with comparative ease: the sheer bulk of medical literature makes it an arduous task to find a reference from a name alone without any date.

Notes on Books

The small sum of one shilling secures (post free) an attractive and copiously illustrated "Special Hospitals Number" of the *Architects' Journal*, issued on November 16th.[6] In a leading article, which states that the number of hospitals that are overbuilt in one section and underbuilt in another is legion, the importance of the "hospital-specialist" architect is emphasized. To control design he must be a man who is able, by his acquaintance with the development of all types of hospitals throughout the world, to guide organization. In England equipment is probably below world standard; in Paris and Copenhagen, for example, the centralized machinery of hospital laundry services effects a saving of something like £50,000 a year, a state of affairs which is impossible with the "voluntary system of water-tight hospital units" in this country. It seems, on the other hand, that in some specialized institutions—notably children's hospitals—we are far above the standard of much-praised places abroad. The principal contents of the issue include well-illustrated articles on modern radiological buildings in Germany, on light and air in the modern hospital, and on the planning of nursing homes. Plans and illustrations of some thirty hospitals are also given.

The Donnan Equilibria,[7] by T. R. Bolam, is a capably prepared treatise on the remarkable phenomenon of the passage of a salt by dialysis from a less concentrated to a more concentrated solution, and the conditions, first investigated by Donnan, by which the occurrence of this phenomenon is determined and under which the return of the salt may be inhibited. It deals mathematically with the theoretical views of the subject, and describes the more important experimental investigations by which the theory has been verified. The theory is called into requisition to explain the osmotic equilibria maintained between the various body fluids of the animal; it is needed to account for the comparative absence of salt in organisms that grow in sea water, and it is of service in technical industries.

Professor J. P. Peters and Dr. D. D. Van Slyke have just completed their large textbook of *Quantitative Clinical Chemistry*[8] by the publication of the second volume. The first volume, which appeared last year, and was reviewed in these columns, dealt with the general problems of clinical chemistry, and the present volume is devoted entirely to a detailed description of the methods employed. The value of a book of this kind depends chiefly on the practical experience of the authors. The reader does not require to know how many different methods have been used in the past, but wants exact details of the best method, and warnings about important sources of error. In the past such workers have had to rely chiefly on German literature for a systematic description of the methods they employ, and it is very pleasant to welcome the completion of an English work on such a large scale.

[6] The Architectural Press, Ltd., 9, Queen Anne's Gate, Westminster, S.W.1.

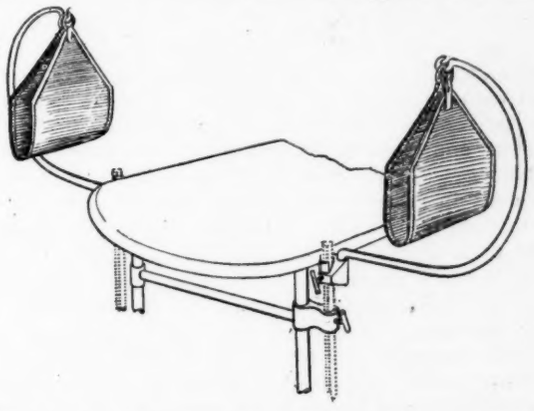
[7] *The Donnan Equilibria and their Application to Chemical, Physiological and Technical Processes.* By T. R. Bolam, M.Sc., D.Sc. London: G. Bell and Sons, Ltd. 1932. (Pp. vii + 154; 12 figures. 9s. net.)

[8] *Quantitative Clinical Chemistry.* Vol. ii, *Methods.* By John P. Peters, M.D., M.A., and Donald D. Van Slyke, Ph.D., Sc.D. London: Baillière, Tindall and Cox. 1932. (Pp. xix + 956; 95 figures. 52s. 6d. net.)

Preparations and Appliances

LITHOTOMY CRUTCHES

Mr. John Everidge, F.R.C.S. (senior urologist, King's College Hospital) writes: In only those operating tables especially designed for the purpose can a position be obtained suitable for cystoscopic, gynaecological, or rectal examinations. The orthodox arrangement comprising vertical posts each surmounted by a shepherd's crook from which are slung ankle-straps, seldom produces the ideal position for cystoscopy, for the hyperflexion of the hips so obtained tilts the long axis of the pelvis downwards and backwards, throwing the trigone into a hollow. Further, in the male this pelvic tilt prevents the cystoscope from being brought to the horizontal plane without force, and hence renders bladder washing through the cystoscope difficult—in some cases impossible. My aim has been to design comfortable leg-carriers which can be adapted to any table—no matter with what supports it is already



equipped—the only necessities being vertical posts. The supports suggested consist of two curved bars surmounted by hooks. At the lower ends are adjustable thumbscrew attachments to allow fixation to the existing table columns. From the hooks above are slung canvas hammocks, in which the calves rest. The freedom of motion allows the legs to take up a position which ensures comfort to the patient and convenience to the surgeon. The curvature of the supports prevents any pressure upon the bones and nerves of the legs—especially the external popliteal nerve. The supports are also suitable for rectal and gynaecological purposes. The whole equipment can easily be carried in the surgeon's bag.

This fitting has been made to my design by Messrs. Cory Bros. (54, Mortimer Street, W.1).

Inexpensive Stop-watches and Alarm Watch

Reference was made in this column three years ago to a very inexpensive stop-watch supplied by Messrs. A. Arnold and Co. (122, St. John Street, Clerkenwell Road, E.C.1). We have now received from the same firm samples of improved lever stop-watches, suitable for laboratory workers and medical practitioners, and sold at correspondingly low prices. The pocket-type 30-hour stop-watch has an enamelled dial graduated in one-fifth seconds, and a side lever projection which stops and starts the centre hand; it costs only 10s. 6d., and is guaranteed for two years. A very neat centre-seconds wrist watch, operated in the same way and complete with strap and unbreakable glass face, is sold at 15s., and with a guarantee of three years is remarkable value for the money. Each of these watches has also the hour-hand and minute-hand of an ordinary timepiece; the cases are of chromium nickel. Arnold's "appointment alarm" watch is fitted with a bell inside, which can be set to ring at any desired time by adjusting an index hand on the dial. The back cover opens to form a rest for keeping the watch upright on the desk; the alarm mechanism can be put out of action when the watch is only needed for ordinary purposes. The price, with three years' guarantee, is 25s.

THE LEGAL DUTY OF MEDICAL PRACTITIONERS IN THE CERTIFICATION OF DEATH*

BY

W. B. PURCHASE, *M.C.*, M.B.

CORONER, NORTHERN DISTRICT OF LONDON

As a preliminary it may be convenient to consider shortly the law relating to the actual certification. In the case of the death of a person who has been attended during his last illness by a registered medical practitioner such practitioner must sign and issue a certificate stating, to the best of his knowledge and belief, the cause of death (Births and Deaths Registration Act, 1874, s. 20(2)).

The doctor's duty does not, however, end there. He shares, with others about the deceased at the time of death, the common law duty to inform the coroner of any circumstances which he has reason to believe would render an inquest necessary. In criminal cases this duty is stronger than some practitioners may readily admit—"in such a case, the desire to preserve the confidential relationship which exists between the medical man and his patient must be subordinated to the duty which is cast on every good citizen to assist in the investigation of serious crime" (Avory, J. (1914) 49, *Law Journal*, 713). Let me now consider and outline the class of case in which the coroner is put upon inquiry. He is concerned with the death of a person "if there is reasonable cause to suspect that such person has died either a violent or unnatural death or a death the cause of which is unknown" (Coroners Act, 1887, s. 3); he need not hold an inquest in cases of death from natural causes.

It may be of interest to analyse further the cases of violent or unnatural death and to see how some of them crop up in everyday practice and may present to the practitioner the temptation to issue a certificate which just avoids the coroner being put upon inquiry. I may say that I feel very strongly that the person to decide, in a case of any doubt, is the coroner—many cases are referred to him in this manner, and he is able to allow the practitioner to issue the certificate in the way proposed or desired.

Types of Violent or Unnatural Death

These may be due to any of the following circumstances: accident or injury; operative shock and/or anaesthetics; want, exposure, or neglect by others or self-neglect; alcoholism, acute or chronic; drugs and drug addiction; industrial disease. I do not suggest that this list is exhaustive, but it may suffice.

Accident and injury cases include septicaemia following stings or injuries, and osteomyelitis following falls, etc. They also include cases of abortion. In the latter cases I always make some inquiry, and I hold an inquest unless I am abundantly satisfied that the case must be natural. It may be of interest to note that in a fairly short experience I have known of one conviction for procuring abortion in a case which was considered during life to be entirely natural, and another in which the dead woman had made a dying declaration in which she described how she had syringed herself. I always regard this sort of story with suspicion, since it may well originate with the abortionist, as is exemplified in the second case, in which, after I had adjourned my inquest, I received information which led to the arrest and conviction of the abortionist. Indeed, I tend to believe that deaths from natural abortion are very rare. When there is a streptococcal infection, abortion seems likely to be unnatural, and all such cases deserve the most critical investigation.

Operation and Anaesthetic Deaths.—In requesting that deaths after operation and/or anaesthetics (say within twenty-four hours) should be reported to me so that I should at least know of them, I felt that I was on controversial ground in my own district of London. Some may think that coroners are tiresome people whose knowledge may not be up to date and who do more harm than good by holding inquests in, for example, anaesthetic cases, but the coroner and the doctor both have to abide by the law. How can a death which has been brought about, at the time when it occurred, by something external (operation or anaesthetic) be *natural*? It may be not *unexpected*, but that is not the same thing. Nevertheless, cases after operation and those after anaesthetics do not stand quite on the same footing, and I think it is pretty generally allowed that if a person who is already gravely ill dies after an operation (as distinct from dying during an operation or from the anaesthetic), he may die really mainly from his disease. In such cases one may regard the operation and its attendant shock as part of the disease. But cases where the death is due to the anaesthetic are different. There is a modern method of increasing popularity, I think, which deserves mention. I refer to "premedication"—that is, the administration of some drug like paraldehyde, or one of the barbitone group such as nembutal, to produce a drowsy state. The actual operation may be performed under the influence of an anaesthetic of transitory power, such as gas and oxygen. Now some of the drugs used in this way have delayed effects comparable to what used to be called delayed chloroform poisoning. Death may occur long after the patient has come round from the operation, and still be really due to the premedication drug. I think such cases do offer to the practitioner a tempting choice. Should he issue a certificate and give as the cause of death the condition which led to the operation, or should he boldly inform the coroner? It must not be forgotten that new anaesthetics tend to be used in cases where, say, ether or chloroform is contraindicated, and thus they may be on trial in cases where the mortality is already likely to be high. It seems to me that these cases will become more important as the method comes more into vogue.

Cases of neglect, want, etc., do not call for much comment from the point of view of certification except in so far as the Registrar-General requires them for the purposes of statistics. They should, of course, be reported, even though they are not entirely natural. Alcoholism and drugs, on the other hand, do provide medical practitioners with problems from time to time. What is a doctor to do who knows that one of his patients has died of delirium tremens, or of chronic alcoholism, or veronal poisoning, or the like? It is no real way out of the difficulty to issue a certificate for, say, hypostatic pneumonia—the terminal event. The latter is not, to the best of the doctor's knowledge and belief, the real cause of death at all, but if he opens the matter up fully he is not likely to be thanked by the patient's relatives. I think the doctor should issue a truthful certificate, and impress upon the family that he is obeying the law, and that if he evaded it the facts might come to light in a less desirable (or perhaps scandalous) manner.

Cases of industrial disease in which perhaps the widow of a workman is convinced that her husband's death and ill-health are due to his work form the last subject for discussion. Some occupations are admittedly dangerous in producing disease, and it seems that the proper course is for the doctor to give what certificate he can and to report the case to the coroner. It is much better in these cases, as in all the others, that the eventual responsibility for the course adopted should rest upon the shoulders of the coroner, for he is the person who can deal with the matter in any event, and he is now able (since 1927) to do so in cases of natural death, as I have already pointed out, without holding an inquest at all.

* Read in the Section of Forensic Medicine at the Centenary Meeting of the British Medical Association, London, 1932.

PUBLIC HEALTH CONGRESS AND EXHIBITION

A Public Health Congress and Exhibition was held at the Agricultural Hall, Islington, last week, under the auspices of the Ministry of Health and various associations of local authorities, whose delegates attended to the number of 1,000. The exhibition included much that was of interest to the medical and sanitary officer. A large range of hospital ambulances was displayed, and a special feature was a demonstration by the London County Council for the benefit of other local authorities of the saving which can be effected by the standardization of specifications for the health and sanitary departments, and the organization of central purchasing. The Minister of Health (Sir HILTON YOUNG), who opened the congress, remarked how encouraging it was to find that all the ingenuity and effort was not being expended on equipment for war, but much of it, as the exhibition testified, on securing health, safety, and communal comfort. He praised the local authorities for the discretion with which they had carried out the requirements of economy: public health services had been unimpaired.

The subjects discussed in different sections, beyond those of which we give more extended notice, included smoke abatement, health and housing, the administration of mental hospitals, sewage purification, public cleansing, the provision of playing fields, and town planning.

SCOPE OF INFANT WELFARE CENTRES

A discussion on the scope and uses and abuses of infant welfare centres was very largely attended, although two other conferences of medical interest were meeting in the building at the same time. It was held under the auspices of the Association of Maternity and Child Welfare Centres, and was presided over by Sir FRANCIS FREMANTLE, M.P.

Dr. ETHEL CASSIE (Maternity and Child Welfare Medical Officer, Birmingham), in opening the discussion, described the ideal centre as a cheerful social place where the baby was highly valued and the mother encouraged and never blamed. As to whether whole-time or part-time officers were employed was a matter of little importance, except from the point of view of economy, and sometimes of punctuality in attendance, but the officers must have the right knowledge and some teaching ability. The treatment of disease was a matter for the clinician, whether family doctor, parish doctor, or hospital doctor. But it was not perhaps fully realized that no provision was made for the treatment of the children of the unemployed, apart from the limited accommodation at hospitals. There would be an increasing tendency, which she deplored, to treat these sick children at the infant welfare centres; but how could they be refused in districts where no other help was available, not even that of the out-patient departments?

Dr. ERIC PRITCHARD (Chairman of the National Baby Week Council) described the small beginnings of the maternity and child welfare movement, with which he was associated, about 1906. No one could have anticipated that in a quarter of a century the movement would increase until there were now 3,000 welfare centres in the country. But he could not say that he had the same pleasure when he watched the direction of development in certain respects. The idea of the centres originally was education; it was realized that infant mortality was controllable, and that its diminution depended upon a knowledge of mothercraft. There was still a great danger that these centres might become places for the treatment of sick children, and, like Dr. Cassie, he deplored such a diversion from the original purpose. It was also intended that they should be of a voluntary character, but that was impossible in its full extent in view of the evolution through which they had passed. He saw no reason, however, why the ideal which Mrs. Sidney Webb first suggested should not be carried out, although it appeared so revolutionary at the beginning—namely, that this should remain a voluntary movement in a municipal setting. With regard to the equipment of the medical officers he believed that he was in a position to judge of the results of their work, as he had a consultative centre to which cases were referred from all parts of the country. He had to say that in a large number of cases the advice which had been given did not inspire him with any great confidence or satisfaction. The way in which medical officers were appointed to these centres was not what he would like to see. What was required of such officers was a special knowledge, not of paediatrics, but of the way in which certain simple conditions, such as skin troubles, thrush, diarrhoea, constipation, and umbilical hernia, for example, were to be treated. The sort of treatment which was recommended at some centres for these simple complaints was such as to create a certain amount of misgiving. Some guarantee as to qualification or a diploma should be required. A diploma in paediatrics might not be suitable, but it would be a good thing if there were a diploma in mothercraft. The D.P.H. did not cover the ground.

Dr. H. W. POOLER (medical superintendent, Infant Welfare Centres, Derbyshire County Council) said that the work of these centres should be, and for the most part was, that of inspection and education, and any development outside those limits should be watched closely, lest, in the laudable desire to increase their usefulness, the real value of these centres to the community might be diminished. Long experience had led him to the conclusion that the best form of instruction was individual; he was no great believer in talks with mothers at classes. Regular medical inspection of the pre-school child must come sooner or later, and much, perhaps most, of this work would be demanded from the infant welfare centre. With the duty of inspection must come that of reference for treatment to the appropriate agency. This would involve treatment by means of contract medical service, and by far the best form of contract medical service was that which had received the approval of the British Medical Association—namely, the extension of medical benefit under the National Health Insurance Acts to the dependants of insured persons and others of like economic status. Under this proposed scheme there would be the provision of a family doctor for the members of every family, as well as arrangements for specialist and hospital treatment where necessary. Dr. Pooler deprecated the giving of relief at the infant welfare centres, and also the sale there of dried milks.

Dr. WILLIAM PATERSON (Chairman of the Maternity and Child Welfare Subcommittee of the British Medical Association), who spoke in the absence of Sir Henry Brackenbury, said that there was one thing which must have struck everybody in connexion with these centres—namely, that at some point or other the doctor responsible for the work must feel very much tempted to give treatment, and that was not allowed. The British Medical Association, two years ago, had drawn up a scheme of General Medical Service for the Nation. The Association advocated the extension of the national health insurance system to dependants, and this seemed an excellent way of getting over this particular difficulty of treatment attaching to the centre. He added that as chairman of the subcommittee referred to, he had been brought into close contact with the work of welfare centres. At one time a great many complaints were heard from doctors that this work was encroaching upon their practice. Less and less was being heard of these complaints; but there was no doubt that it was encroaching, in that the efficiency of the work done at the centres, and the manner in which the mothers received the advice given to them, did result in less work for the general practitioner, simply because there was less illness to be attended. That was a great compliment to the centres, the more so because it was given by a general practitioner.

HYGIENE AND CHANGES IN DISEASE

In another section Dr. J. BROWNING ALEXANDER read a paper on the relation of hygiene to changes in disease.

Preventive inoculations, he said, had no doubt been partially responsible for the diminution or virtual disappearance of certain diseases, but it was highly probable that improved hygienic conditions, including better food supplies, had had their part in bringing about a state of greater resistance to the invasion of organisms. He instanced typhoid fever, diphtheria, small-pox, and tuberculosis in this connexion. The increasing rarity of enteritis was to be attributed not a little to the importance attached to the hygiene of the mouth, and the same was true of the diminished incidence of peptic ulcer. He referred also to the disappearance of certain industrial diseases. Plumbism among workers in lead and paint factories was now rare, thanks to improved health conditions and regulations as to cleanliness.

In the discussion on the paper it was suggested that certain diseases were increasing, notably diabetes, owing to altered dietetic habits. Dr. Alexander's view was that the supposed increase in the number of diabetics was due to the fact that much more was known about the disease to-day than ten years ago, but it was probably true that glycosuria, as contrasted with true diabetes, was increasing, due to consumption of food far in excess of bodily requirements.

Heat Rays in Living-rooms

Sir Leonard Hill gave a demonstration of the correct use of heat rays in living-rooms. He had found that the stuffy feelings produced by radiation from a dull red electric fire were relieved by the cooling effect of moving air on the face. The stuffy feeling was experienced by those who, like himself, had a deflected septum of the nose and partially obstructed nasal airway. It was no relief to such persons to have the fire placed under a wide open flue, but the turning of the back to the fire so that the naked skin was not exposed to it immediately caused the trouble to disappear. The nose-closing effects of the rays from dull red or dark sources of heat were set aside by fanning and so cooling the part of the skin irradiated. The most remarkable thing was that the nose-closing reflex set up by the rays of the dull red electric fire was antagonized by rays from an incandescent source, such as a blazing coal fire.

Economic Value of Physical Treatment

Lord Moynihan made his first appearance as president of the Chartered Society of Massage and Medical Gymnastics when he took the chair at a discussion and demonstration held under the auspices of that body. He paid a generous tribute to the value to surgery of ancillary services, without which, he said, the members of his profession would be left very much adrift. Dr. James Mennell, speaking on the economic value of physical treatment, deprecated the ignorant and incompetent rubbing that was often given in place of massage. Massage must be skilled, or it ceased to be worthy of the name. All members of the Chartered Society, he said, signed a pledge not to undertake any case except under direction of a registered medical practitioner. The masseur and masseuse were not trained in diagnosis, but in the giving of treatment. He mentioned two instances in which, without a proper diagnosis, massage might be given to the grave disadvantage of the patient—namely, swollen ankles when these were a sign of failing heart or kidneys, and double chin due to enlargement of the thyroid. At the conclusion of Dr. Mennell's address a demonstration was given by the Ling Association, including a posture for girls with slight physical disabilities.

Occupational Therapy in Mental Hospitals

One session of the Congress was devoted to occupational therapy in mental hospitals, and industries in mental deficiency institutions. Mr. L. G. Brock, chairman of the Board of Control, pointed out that in mental hospitals the emphasis was placed on the therapy, while in mental deficiency institutions, where a permanent condition was being dealt with, the chief problem was to keep the patient happy and to make him useful, restoring his self-respect as a citizen. Papers were read by the occupation officer of a county mental hospital and the superintendent of an institution for mental defectives, and some account was given by a recent visitor to the United States of the way in which occupation therapy is conducted in that country. In America occupation therapy is a definite form of treatment adopted with the aim of hastening recovery, and a large staff of trained occupational therapists is employed even in relatively small mental hospitals. It has been found that if the occupation officers, whatever may be their knowledge of handicrafts and manual work, have no knowledge of mental illness, their efforts largely fail, and therefore an Association of Occupational Therapists has been formed with the object of maintaining a high standard of training. In the State of New York the Department of Mental Hygiene, which combines the functions exercised here by the Board of Control and, in London, by the London County Council, has a bureau of occupational therapy. Moreover, in addition to the special staff, the nurses in mental institutions undergo a certain occupational course, with a minimum of six lectures and one month's practice. Another speaker described the German and Dutch experience ; in Germany and Holland occupation therapy is carried out by the medical staff themselves.

Preventive Work of Hospitals

The hospitals had a special day of their own at the Congress. The *Lancet* Nursing Commission report was the subject at one session, over which Sir Arthur Stanley presided, the discussion being opened by Sir Squire Sprigge. Many representatives of the nursing profession participated, and there was very general agreement with the Commission's recommendations. " The Poor Law institution and its place in relation to the national life of the country " was the title of a paper by Mr. Roberts of the Walton Hospital, Liverpool. At another session, with Sir Arthur Newsholme in the chair, the contribution of hospitals to preventive medicine was the subject of the discussion, which was opened by Mr. C. E. A. Bedwell, house governor of King's College Hospital. Taking the three objects of medicine as defined by Sir George Newman in 1926, Mr. Bedwell claimed that hospitals had done a great deal to postpone the event of death and thus prolong the span of man's life ; they had made a substantial contribution to the prevention and removal of the causes and conditions of disease or of its propagation, and they were beginning to see as a possible sphere of action the development and fortification of the physique of the individual, thereby increasing his capacity and powers of resistance. One definite contribution of the hospitals to preventive medicine was the reduction in the number of abnormal conditions at confinements, thanks to the care of mothers at ante-natal clinics ; maternity wards were now occupied by normal labours. With regard to out-patients, Mr. Bedwell described the hospital waiting list as the most refined form of cruelty ever concealed under the cloak of charity. On the other hand, he admitted that delay seemed to relieve a certain number of patients from the necessity for operative treatment. The enormous increase in the number of out-patient attendances, particularly noticeable in London, was evidently a process which might be described as the hospitalization of the community. Contributory associations were to some extent carrying out an educational work, since they appealed to the thrifty, and so encouraged the strengthening of character ; but Mr. Bedwell was alive to the danger that, as a medical writer had said in relation to another matter, the very thing which had been created to help might actually bring about a loss of individual will power. Such a remark, he thought, was applicable to the out-patient department of a hospital, and might even become so in reference to contributory associations. Mr. Bedwell concluded by saying that one point seemed to emerge quite clearly from all these discussions: that the conditions called for closer co-operation between the hospitals and the general practitioner, so that each might clearly appreciate the functions of the other.

British Medical Journal

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MEDICINE IN PARLIAMENT

The new session of Parliament which was opened by the King on Tuesday is not expected to bring more legislation of medical interest, or a more generous attitude towards expenditure on public health, than the session which ended last week. The session of 1931–2 opened after a general election at which retrenchment was a prime issue, and the appointment of a financial expert, Sir Hilton Young, to be Minister of Health portended a stocktaking and a stern control of expenditure by the State and local authorities on health services and other functions of local government. Moreover, the size of the Government's majority in the Commons reduced the ability of the medical M.P.'s and the Parliamentary Medical Committee to affect public policy. The committee has decided to influence lay opinion in the House of Commons by opening to all members some of the meetings at which it is addressed by experts on medical subjects.

Early last session Parliament agreed to proposals for reducing the salaries of officials in the Government services, including medical officers, and the Chancellor of the Exchequer invited local authorities to make corresponding reductions in salaries. These "cuts" were accepted with the same stoicism which was shown by most of the other classes who were called upon for sacrifices. No allegation has been made subsequently in the House of any setback in public health services. As Sir Francis Fremantle said during the Debate on the Address a year ago, a breathing space for a year or two, to permit proper working of the Local Government Act, 1929, may be good for local administration. Later in the session Dr. Morris-Jones originated a debate on the health services, and Sir Hilton Young, in reply, denied that, in the interests of economy, there had been unwise restriction of the public health services, though the scheme the late Labour Government put forward for reducing maternal mortality had not been adopted. It is a matter for great satisfaction (as we said a week ago) that the call for economy has not arrested the inception of the British Post-Graduate Medical School at Hammersmith, nor has the Government grant for this purpose been withdrawn.

The chief medical subjects to excite inquiries by lay M.P.'s in 1931–2 were the typhoid outbreak in Yorkshire, the unconfirmed association of cancer with nickel works, and the propriety of taxing imports of Norwegian cod-liver oil. No sniping at the medical profession was attempted, save for some allegations of lax certification of married women, made in the debates on the National Health Insurance and Contributory Pensions Act. These imputations were challenged, particularly by Dr. O'Donovan. This National Health Insurance Bill was introduced to make emergency economies in the scheme, which the Minister of Health averred to be living on its accumulations. Without such economies he feared it might break down at the end of the next valuation period. Clearly there is little prospect of additional medical benefits for some time. The Dangerous Drugs Act has been passed to permit ratification of the Geneva Convention of 1931. On the Patents and Designs Act several medical M.P.'s made a fruitless plea for modification of the existing law regarding discoveries of medical value. An Act was passed to make the sons of medical women eligible for election as foundation scholars of Epsom College. A measure of much potential value to public health is the Town and Country Planning Act, "whereby responsible authorities will in future be enabled, subject to due consideration of all interests concerned, to study and deal with problems of development in relation to areas, whether built upon or otherwise." This Act was much modified from the Government draft, and its coming into force is deferred. A Lotteries Bill, brought in by a private member to authorize lotteries for hospitals in the United Kingdom, was read a first time by a majority, but went no further. The Government has referred this question to the Royal Commission on Sweepstakes. In the brief discussion of the Bill the House showed much feeling and deep cleavage of opinion. Repeated questions have shown the concern of members at road accidents, and the breakdown of provision for payment to hospitals treating persons injured in these accidents is admitted. Mr. Pybus, the Minister of Transport, is of opinion, however, that the Road Traffic Act is too recent for amendment to be attempted at present. Questions have been asked about sterilization of the unfit, and a committee of private members has just completed a report upon a draft Bill. No action on this matter is to be expected.

In the session which began this week the Government will submit proposals on rent restriction and the housing subsidies, and the Minister of Health has to discuss a readjustment of the block grant to local authorities for health services and other purposes.

OPERATIONS ON THE LABYRINTH FOR OTOSCLEROSIS

There is no region of the body which the surgeon does not look upon as a field for the exercise of his active fingers. And there is no doubt that on the whole this restless activity has resulted in great benefits to humanity. Some organs and structures, however, respond more readily to the efforts of the surgeon than do others, and among the latter the internal ear is one. Otosclerosis is a disease which has hitherto, with a few exceptional efforts, escaped the activities of the surgeon. But the deafness and the tinnitus which so often accompany it are very distressing conditions, and otologists

themselves feel that their helplessness in relieving it is a reproach to their special branch of the profession. So strongly has this been felt that occasionally during the last forty years some otologists have taken the responsibility and risk of operating upon the labyrinth, though they have probably been well aware that the dice were loaded heavily against them.

Towards the end of last century mobilization and extraction of the stapes were practised by Kessel, Botey, and Miot, but the results were discouraging and the operation was abandoned. Later on Trautmann proposed the removal of the walls of the oval window along with the ankylosed stapes by means of a trephine, and Passow tried the effect of opening into the labyrinth through the promontory. None of these operations was successful. Subsequent operators upon the labyrinth for the relief of deafness, etc., in otosclerosis directed their attention for the most part to the opening of the labyrinth in one or other of the semicircular canals. Among these were Bárány, Holmgren, and Jenkins. But either on account of their failure to relieve the deafness or because of the risk of labyrinthitis none of these operations ever became accepted by otologists as justifiable procedures. In recent times, however, the question of operating on the labyrinth for the relief of otosclerosis has again been opened by Dr. Sourdille of Nantes ; and, as his method of procedure differs in some noticeable particulars from that of his predecessors, a few words concerning it may not come amiss.

The reasons which Sourdille gives for the failure of the operation in the hands of previous surgeons are: first, that the opening into the labyrinth was always made in such a way that it could not remain permanently patent ; and, second, that no sound amplifier was constructed to compensate for the loss of function of the chain of ossicles. It may be added that in Sourdille's opinion failure in previous operations of this nature was often due to the local septic processes which are so apt to occur in operations on the middle ear and mastoid regions. He attempts to avoid these difficulties by making the field of operation wide and open, by employing a tympano-meatal flap to act as a sound amplifier and by arranging that the opening of the labyrinth shall be made in a field covered by a dry epidermal surface instead of the normal muco-periosteum of the middle ear. The whole procedure consists of three operations at intervals of several weeks. The successive operations may be described very briefly as follows: The first consists in performing a somewhat modified radical mastoid operation in order to make an open field for those which are to follow. A tympano-meatal flap with the head of the malleus removed is also made during this first operation, and the cavity of the middle ear proper is shut off from the attic and aditus by means of this flap. The wound is then allowed to be covered by epidermis as in an ordinary radical mastoid operation. This takes several weeks, and when it is complete the second operation is undertaken. It consists in stripping off the cicatrized epidermal lining of the cavity and separating the tympano-meatal flap from the rest of that lining and then sliding the latter inwards to cover the deeper portion of the wound in the region of the aditus and the prominence of the horizontal semicircular canal. The cavity is then again allowed to become covered with epidermis, a process which occupies on an average about twenty-five days, but sometimes may be much longer. The third operation consists in making an opening into the horizontal semicircular canal by removal of the bone over the ampulla and anterior crus. This opening should be about four or five millimetres in length and one millimetre in diameter. The tympano-meatal flap which was made in the first operation is then folded down on the opening in the horizontal canal and becomes adherent to the surrounding bone.

All three operations are performed under local anaesthesia, and every possible antiseptic precaution is taken. In regard to this latter point Sourdille attributes great importance to the hypodermic injection of lacto-proteides, which he considers a valuable agent in preventing labyrinthitis. As a result of his method of treatment Sourdille claims to have obtained remarkable improvement in the hearing. He does not, it is to be noted, claim that this improvement occurs in all cases, and he admits that in some there is no change in the hearing power. In many of the cases in which no improvement occurs, however, there appears to be an arrest in the evolution of the disease. He does not give figures showing the improvement in individual cases, but states that an increase of from eight to ten times the hearing power may be expected. The differences in amount of improvement depend upon the degree and duration of the deafness and the age and general health of the patient.

One of the objections to Sourdille's procedure is the tax which it places on the patient's endurance. Three successive operations in the middle ear and mastoid region at intervals of several weeks are what few people would contemplate with equanimity. The technique necessary for the successful undertaking of the whole procedure is obviously very difficult, and Sourdille employs an ear microscope in order to obtain a magnified image of the structures upon which he is operating. Difficulties of technique, however, can usually be overcome by various artifices, and it is not likely that this objection alone will prevent the adoption of the series of operations required. It might have been expected that the risk of labyrinthitis, with the possibility of intracranial complications, would be considerable, but it would appear from Sourdille's statistics that this risk is not very great. He has operated on about 150 cases, and does not refer to any fatality among them. This freedom from septic infection of the labyrinth claimed by Sourdille is undoubtedly due in very large part to the fact that he opens the semicircular canal in a surrounding field of dry epidermis, which has been created by his previous operations. Indeed, to many otologists this new feature of

Sourdille's procedure is the most important difference between his method and those of his predecessors in the same field.

The most serious criticism to make in regard to Sourdille's monograph[1] is the omission of the clinical history of any of the cases operated upon, and the absence of clinical reports. This is most unfortunate for two reasons: it deprives otologists of the opportunity of judging whether the cases operated upon were cases of true otosclerosis or not ; and, indeed, prevents criticism to a very large extent. Furthermore, this absence of any clinical history leaves the surgeon in the dark as to what cases he should select if he wishes to give the procedure a trial. Thus there is no reference to tinnitus nor to the effect, if any, of the operation upon this symptom. Now it is not at all an uncommon occurrence for a patient to tell the otologist that he could bear the deafness without much difficulty, but that the tinnitus is unendurable. Indeed, in certain cases of otosclerosis the surgeon would be justified in operating upon the labyrinth for the relief of tinnitus even if there were no prospect of improving the deafness, provided there was any reasonable evidence that the tinnitus would actually disappear. Sourdille makes no reference to this matter in his monograph. Incidentally it may be remarked that a considerable proportion of cases of tinnitus associated with otosclerosis could not be improved by any operation on the labyrinth, since section of the cochlear nerve within the skull has failed to relieve them. In such cases the cause of the tinnitus is probably to be found in the projections of the cochlear nerve within the brain. Paracusis willisii is another symptom in many cases of otosclerosis in regard to which Sourdille makes no reference to the effect of the operation. This symptom is usually considered of bad omen so far as the effect of treatment is concerned, and any evidence in regard to it would have been of great interest.

There is one more matter in Sourdille's monograph to which some allusion may be made. He refers to the "obstinacy of a few research workers," as though that had been an obstacle in the path of the surgeons who may have desired to operate upon the labyrinth for the relief of otosclerosis. There is no reason to suppose that the research worker is any more obstinate than average humanity ; and even if he were it would still be doubtful if the activities of the operating surgeon have ever been restrained by that patient beast the research worker. All that the latter can do is to find out and explain to the best of his ability the clinical and pathological facts and then leave the surgeon to do his best. These operations on the labyrinth for the relief of otosclerosis have never become accepted procedures in otology because of the experience of the surgeons who have tried them and have been frank enough to admit that the results were not satisfactory. Sourdille's procedures may, perhaps, have a different fate.

[1] Le traitement chirurgical de l'otospongiose et sa technique opératoire, *Rev. de Laryngol., Otol. et de Rhinol.*, September–October, 1932.

STUDIES OF SYNOVIAL MEMBRANE

It is still frequently stated that joint cavities are lined by "endothelium." That this statement misrepresents the origin and structure of the synovial membrane has been shown by the work of comparatively few observers, whose findings have not yet passed into the general currency of medical knowledge. To theirs may now be added the studies of Sabrazès and his co-workers,[1] whose conclusions are substantially those of Franceschini and of Key—namely, that synovial membrane is composed of specialized fixed connective tissue cells, of which those in villous areas are adapted to the purpose of secretion. The free cells found in normal synovial fluid, which number about 200 per c.mm., are chiefly wandering connective tissue cells ("macrophages" ; "monocytes"): the confusion of terms used in describing such cells unfortunately precludes any comparison between the detailed findings of different observers. It is of interest that within a few hours of death the joint cavities are invaded by polynuclear leucocytes ; satisfactory study is therefore only possible with fresh operation or slaughterhouse material. The origin of synovial fluid has been a matter of dispute: it is variously described as a transudate, a product of cell disintegration, and a secretion. The staining of mucin granules in the cells of villous areas, previously reported by Mayeda and Timbrell Fisher, is confirmed by Sabrazès, and by Kling,[2] who has also succeeded in collecting enough normal synovial fluid to extract its mucinous substance in solid form. This substance contained no phosphorus, as would be expected from its nucleo-protein if it were formed by cell disintegration ; it also failed to reduce copper salts, which negatives the presence of chondro-mucin formed by the disintegration of cartilage cells from the articular surfaces. In Kling's opinion synovial fluid is a specific secretion, differing totally in its characters from those of a transudate. An inflammatory synovial effusion, however, is a "circulatory extravasation" (exudate), and the admixture of a large volume of such fluid obscures the characters of the synovial secretion proper in just those cases where comparatively large amounts are available for examination. The studies of Sabrazès include a consideration of tumours of synovial origin. He proposes the term "benign cystic synovialoma" to include synovial cysts, ganglia arising in connexion with tendon sheaths, and cysts of the semilunar cartilage of the knee, the latter an interesting and probably not very rare condition, since descriptions of eleven and eighteen cases have recently been published in England by Bristow and Ollerenshaw respectively. It commonly affects the external cartilage (an argument against traumatic origin, since the internal cartilage is that usually affected in derangement), and the cyst presenting externally is but one of many which honeycomb the substance of the cartilage itself. The only effective treatment is removal of the cartilage, a procedure for which the surgeon will not be prepared if the nature of the condition has not been recognized. Whether any of these conditions is truly neoplastic may be disputed ; there is no evidence that they are inflammatory, but most authors prefer to describe them as "degenerative." There is, however, an undoubted

[1] Sabrazès, J., de Grailly, R., and Salabartan, J.: *Gaz. Hebd. des Sci. Méd. de Bordeaux*, 1932, liii, 385, 401, 449, 481.
[2] Kling, D. H.: *Arch. Surg.*, 1931, xxiii, 543.

tumour arising in synovial membrane, of which Sabrazès describes two additional cases, and for which he proposes the name "malignant policystic synovialoma." In all, five other single cases have been described in the Continental literature, and three were collected and described in detail from the histological standpoint by L. W. Smith.[1] The tumour reproduces the structure of synovial membrane, and all authors are agreed on its apparently dual nature. Its villi are bordered by cells of secretory type, based on a sarcomatous stroma. It has a predilection for the knee-joint, and is commonly mistaken for tuberculous disease. Slow growth confined to the joint and its neighbourhood for several years is succeeded ultimately by dissemination, and in cases where amputation has been neglected or unduly delayed, death has followed from pulmonary metastases.

MALARIA CONTROL IN SOUTH AFRICA

A memoir on malaria investigations in some parts of the Transvaal and Zululand, by N. H. Swellengrebel, S. Annecke, and B. de Meillon, has been published by the South African Institute for Medical Research.[2] Some very important points regarding the practice of malaria control in the Union of South Africa are elucidated. The observations already made indicate that only two out of twenty species of anophelines may be considered as the principal vectors of malaria—namely, *A. gambiae* (*costalis*) and *A. funestus*. This conclusion was reached partly on the determination of the index of natural infection and partly on epidemiological grounds. Both species in areas of high malarial endemicity showed a high rate of infection in human habitations (16 per cent.) even in a year when the fever was considered less intense than usual. The other species of anophelines are found rarely in human dwellings where these two are common. Although *A. praetoriensis* was found infected in 2 per cent. of instances, it is provisionally considered of minor importance. "Species sanitation" is thus rendered possible, as the particular breeding places of the two chief vectors can be dealt with by antilarval measures without causing serious economic losses to the population. *A. funestus* is a stream breeder, and the larvae occur in hill streams, along the banks covered by grass, especially backwaters where the current is not too strong. As soon as a hill stream broadens out into a swamp *A. funestus* is no longer found, unless the reeds have been cut down. This anopheline disappears above an altitude of 3,000 feet, and larvae are absent during the winter months. *A. gambiae* is a pool breeder and favours sunny, vegetationless rain-water puddles, which are constantly replenished by repeated rainfalls. It is greatly attracted by roadside puddles and hoof-marks. On the dry low veld of the Western Transvaal, however, this species continues to breed in rivers even without rainfall; in dry years these rivers are partly filled and leave broad areas of muddy soil in the bed of the actual stream in which *A. gambiae* larvae flourish. The conclusion is that the larval habits of these two important malaria carriers are so selective that their breeding places offer a very promising field for antilarval control on the principle of "species sanitation." Young children show the heaviest infections with gametocytes, and it was found that crescent carriers with only one gametocyte per 1,500 leucocytes may infect a mosquito. The native population of certain highly malarious areas are definitely resistant to malaria. In early childhood no obvious signs of serious suffering may ensue, notwithstanding the presence of a heavy infection. Later on an acquired immunity is shown by the reduction of the parasite rate combined with a high spleen rate. In adults and older children an acquired tolerance is evidenced by a lessened splenic reaction, together with a continued state of immunity in which the numbers of parasites, especially the gametocytes, are kept low in all seasons.

[1] *Amer. Journ. Path.*, 1927, iii, 355.
[2] Publications of the South African Institute for Medical Research, vol. iv, No. XXVII.

QUICKER RADIOGRAPHY

A new intensifying screen allowing much more rapid *x*-ray exposures was announced at the meeting of the British Institute of Radiology on November 17th. It is made from specially refined zinc sulphide, and has received the name of "fluorazure" on account of its intense azure blue fluorescence. Dr. N. S. Finzi, who spoke on the medical aspects of the matter, said that calcium tungstate screens made it possible to reduce the ordinary exposure time to about one-tenth, but with fluorazure this could be diminished again to about one-third or one-fifth of the exposure necessary with the tungstate screen. The details obtained with the fluorazure screen by this extremely rapid exposure were just as good as those with the best tungstate screens, while "graininess," which had hitherto prevented the adoption of zinc sulphide, was not apparent. There was considerable after-glow with *x* rays, but after the first few seconds this was not actinic and could be disregarded. In objects of unusual density, such as the chest, contrast was increased by the use of the new screen, and it was in chest work that the decrease in exposure was most important. Quite a good skiagram of the chest had been obtained at a distance of 6 feet with an exposure of 1/15 of a second, and an exposure of 1/100 of a second was only a matter of obtaining a suitable switch. Details in the portions of the lung surrounding the heart were very much more distinct with the 1/15 second exposure. Direct cinematography of the chest might now be possible for *x*-ray work. Dr. Finzi added that the new screen would be a godsend to those with low-power apparatus, and would enable much better skiagrams than hitherto to be obtained with portable apparatus. A few years ago, when president of the Röntgen Society, he had predicted that the next great advance would come about on the photographic side, but nothing since the introduction of good tungstate screens had given radiographers such a "jump forward" as this new arrival. Professor Woodburn Morison said that the screens had been tried under ordinary working conditions at the Cancer Hospital, and had revealed no disadvantages at all to set off against the great gain in speed. Mr. Leonard Levy, D.Sc., read a paper on the physical aspects of the screen, on which he has been working with Mr. Donald West. More than ten years ago, in the course of experiments on the most suitable form of zinc sulphide for radiographic paints, various substances were produced which exhibited a vivid blue and purple fluorescence instead of the usual bright green. The substances had thereupon been proposed for intensification purposes, but proved to be too coarse,

and gave a "grainy" result, with, at the same time, no great gain in speed. The experiments, however, were continued, with the result that a form of zinc sulphide had now been produced which was much more efficient than calcium tungstate, and inherently more suitable for intensifying screens. A member of the firm of Ilford, Ltd. (the co-operation of whose laboratory Dr. Levy acknowledged), said that the screens were not yet commercially available, but it was hoped that they would soon be ready for general distribution.

INTERNATIONAL RED CROSS

Delegates from fifty national Red Cross societies met recently in Paris at the thirteenth session of the Board of Governors of the League of Red Cross Societies under the chairmanship of the Hon. John Barton Payne (United States). The International Committee of the Red Cross was represented by its president, M. Max Huber, the British Red Cross Society by Sir Edward Stewart, vice-chairman of the Executive Committee. Judge Payne and President Huber referred to the agreement in the outlook of the two international bodies of the Red Cross, the League and the Committee, and emphasized the nobility of a task uniting throughout the world 25 million men, women, and children of all nationalities, without distinction of class, religion, or opinion. Mr. Ernest J. Swift, secretary-general, in his report on the activities of the secretariat, drew particular attention to the action of the League on behalf of refugees, hygiene in the mercantile marine, and the appeal launched after the recent earthquake in Greece. Regional conferences have been planned to take place at Rio de Janeiro in 1933 (the third Pan-American Red Cross Conference), and at Prague on April 12th and 13th, 1933 (Central and Eastern European Red Cross Societies). The fourteenth meeting of the Board of Governors of the League will be held at Tokyo at the same time as the fifteenth International Conference of the Red Cross in 1934. The Board approved the arrangements made for the continuation on a new footing of the advanced nursing courses organized in London at the beginning of 1920.

FACIAL GROWTH IN CHILDREN

A recent report of work done under the auspices of the Medical Research Council appears with the above title and has special reference to dentition.[1] It is an attempt to establish by means of measurements on the living subject the normal rates and directions of facial growth in childhood, especially between the ages of 8 and 14, and to elucidate the normal correlations between the measurements. The measurements were taken by Miss Corisande Smyth, L.D.S., and the data were analysed by Dr. Matthew Young. To establish the normal and analyse it 1,200 London school children showing normal occlusion were chosen. Their ages ranged from 8 to 14, and each six-monthly period was represented by fifty boys and fifty girls. Later a random sample of 100 boys aged 9 to 10 was taken, to test the normal of the child population as distinct from the *ideal* given by the selected children. Later still, children of from 2 to 5 were measured, and there is a hint that the age gap 5 to 8 may be filled in later. Some twenty-two separate measurements were taken, each designed to elucidate some special point, but with one exception (transmeatal axis to lower incisor gum-margin) there is none that tests the sagittal growth of the mandible. Dr. Young's analysis of the data of necessity takes the lion's share of the report, and he has no difficulty in demonstrating the value of the inquiry. The use he makes of the figures, and the fact that he is able to give definite equations showing how his correlation tables may be utilized to test the normality of any of the twenty-two measured characters against age or stature, should be a source of the greatest satisfaction to those who elaborated the measuring instruments, and to those who so carefully collected the data. The Council hopes that with the aid of these measurements and correlations the dentist will be able to diagnose and identify at an early age the various types of abnormalities of the jaws, and so may be enabled to institute preventive treatment. In this connexion muscular exercise is especially mentioned. It is interesting to note that John Hunter's observations on the growth of the jaws, published in 1771, are fully confirmed, and that the present figures are in substantial agreement with those of other investigators. A comparison of the mean measurements of the unselected group with those of the ideal group almost leads Dr. Young to conclude that the ideal occlusion may be the concomitant of a face which is well developed or above the average in general size; but he hesitates, in view of measurements of "post-normal" mandibular occlusion which are now becoming available. Perhaps when these are published a fuller comparison may throw light on the disputed subject of the "adenoid facies." The present research is the most thorough statistical investigation of facial growth that has ever been undertaken, and the figures arrived at all will remain "standard" for the British Isles. There is one criticism which the general reader (medical or dental) may be inclined to make: what appears self-evident to the mathematician is often, to the non-mathematical mind, a mystery.

[1] Medical Research Council. Special Report Series, No. 171. Part I, by Corisande Smyth. Part II, by Matthew Young. London: H.M. Stationery Office. 1932. (1s. 6d. net.)

LOGAN TURNER PRIZE

The first award of the Logan Turner Prize will be made in June, 1934. The subject is: "To investigate the part played by allergy or sensitization as a factor in predisposing the mucous membrane of the nasal fossae and of the paranasal air sinuses to infection and its bearing upon the treatment of disease of these cavities." Papers should be sent in to the Secretary, Laryngological Section, Royal Society of Medicine, 1, Wimpole Street, London, W.1.

We regret to announce the death of Mr. Ernest Clarke, consulting surgeon to the Central London Ophthalmic Hospital; of Dr. W. T. Collier, assistant physician to the Radcliffe Infirmary, Oxford; and of Dr. Spencer Mort, medical superintendent and surgical director of the North Middlesex Hospital, Edmonton.

A Reuter telegram from Sydney announces the death of Sir Charles Clubbe, K.B.E., consulting surgeon to the Royal Prince Alfred Hospital and formerly lecturer on clinical surgery in Sydney University.

We have to announce also the death at sea, on November 16th, of Sir James Crawford Maxwell, K.C.M.G., M.D., who lately relinquished the Governorship of Northern Rhodesia.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY

The annual general meeting of the Medical Sickness, Annuity, and Life Assurance Society, Limited, was held on November 16th, with Dr. F. C. MARTLEY in the chair.

Dr. Martley referred first to the deeply regretted death of Dr. F. J. Allan, who did great service to the Society for many years as chairman and director. The Society, founded in March, 1884, was rapidly approaching its jubilee, and its funds were nearing the million pound mark. With regard to the Sickness Fund, the premium income, though slightly less than last year, was still substantial, and showed a healthy growth, which would in normal times be larger. He believed the Society transacted a larger volume of business of this nature than any other insurance company in the country. The amount of sickness benefit paid out during the year was rather larger than usual, but this was inevitable, as they all knew that in bad times there was more illness, and protracted claims were commoner than in prosperous times. In spite of this, however, the sickness and accident funds approximated to nearly half a million. In the Life Assurance Fund the new business was slightly less. The Society had been chosen as one of the companies authorized to transact the business of an important scheme approved by the Panel Conference for pensions, life assurance, and disability benefits for doctors engaged in national health insurance work. The practice purchase scheme introduced by the Society a few years ago showed only a small increase, but no bad debts had been incurred. A considerable number of cases had been completed under the house purchase scheme. It was hoped to see this scheme increase very largely, because from the Society's point of view there was no better investment than good freehold property, especially of the type occupied by medical practitioners. Administrative expenses again showed a reduction, and every endeavour was being made to see where further saving could be effected. With regard to investments, no money was invested without the fullest investigation and complete satisfaction of the directors as to the security given. Dr. Martley concluded his speech by expressing the directors' appreciation of the work of the staff. In reply to a question by Dr. Fairfield Thomas, he said that the Society had converted all its war stock.

The report was adopted unanimously. Sir William Willcox and Mr. W. H. Dolamore were re-elected directors, as was also Mr. Lancelot M. Bromley, who had been co-opted by the Board to fill the vacancy caused by the death of Dr. F. J. Allan. Messrs. Harber, Sturges, and Fraser were reappointed auditors. The quinquennial valuation report and the recommendation for the payment of an interim bonus on all with-profit policies for permanent sickness and accident insurance and life assurances becoming claims during the next period of account were unanimously approved.

TYPHOID FEVER IN YORKSHIRE

By direction of the Minister, the Secretary of the Ministry of Health issued the following statement on November 18th, in view of the public interest aroused by the outbreak of typhoid fever at Malton in Yorkshire:

No case of typhoid fever appears to have occurred in Malton this year until September 23rd, when a youth from outside the district was admitted into the workhouse infirmary suffering from "pneumonia and diarrhoea." He was not regarded as a case of typhoid until on or about September 26th, and he was retained in the infirmary until October 26th, when he was removed to an isolation hospital outside the district. After October 22nd other cases began to be notified, and up to November 17th there have been 245 cases in Malton and its immediate neighbourhood. There have been fourteen deaths.

All known measures were at once taken and have been continuously maintained to meet the immediate needs of the situation, including the immediate removal from the workhouse and effective isolation of the original infecting patient and of all subsequently notified cases; the sterilization of the water supply by chlorination; steps for protective inoculation of the public; and, of course, the repair of the drain.

As to the course of the outbreak, it should be noted that it was not until October 26th that the sewage from the defective drain was freed from the specific infection which had gained access to it by the removal of the typhoid patient from the workhouse. Thus, in endeavouring to estimate the spread of infection by the water supply among the consumers, the date of October 26th becomes important and indeed critical. It was to be anticipated that from fourteen to twenty-one days after that date primary water-infected cases would be inevitable. Moreover, as the outbreak extended, secondary or contact cases would occur.

Immediately on hearing of the outbreak on October 25th the Ministry of Health sent one of its most experienced epidemiological investigators (Dr. Vernon Shaw) to Malton to advise the local authority and co-operate with the local medical officer of health. Dr. Shaw remains on duty at Malton, and the Chief Medical Officer has personally visited the district.

Immediate inquiry into the cause of the outbreak excluded as a cause conveyance of infection by contagion or contaminated food supply, and confirmed that the outbreak was water-borne.

The drain from the workhouse was found to be gravely defective near its junction with the sewer. Its contents had been deposited for an extended period, not in the sewer, but subterraneously upon land immediately contiguous both to the low-lying water well and to the pumping station (by which the well water was conveyed to the reservoir).

The question of the future of the water supply is under active consideration, both from the medical and from the engineering points of view.

ROYAL SOCIETY OF MEDICINE

ANNUAL DINNER: AWARD OF GOLD MEDAL

The annual dinner of the Royal Society of Medicine was held at the May Fair Hotel on November 17th, when a company of about 180 members and guests assembled under the presidency of Mr. V. Warren Low.

The Right Hon. Sir HILTON YOUNG proposed the toast of "The Royal Society of Medicine," and remarked that this toast had been proposed successively by a member of the Royal Family, the Prime Minister, a bishop, a judge, and now by the Minister of Health. As was said by Clemenceau of a famous pianist who became president of a state, *Quelle chute!* It was a formidable matter for one who ordinarily occupied merely the position of a patient to appear before a medical audience; but at any rate for five years he had been associated with the Rhadamanthi of the profession on the General Medical Council, so that although he might not know much about the bright side of the profession, there was little of its seamy side that he did not know! He went on to refer to the honour to be conferred upon Sir Thomas Barlow, a man who represented a great vintage period in the medical profession. The Society had set itself a great task, and its efforts for the advancement of learning in the cause of humanity were worthy of all praise. The pooling of ideas was most important. Ideas were valuable to the extent to which they were pooled; their utility began only when they were made available, and it was for that purpose that the Society existed. It stimulated professional men to brace themselves to the unwelcome task of the review of accepted ideas. Inefficiency and failure to achieve progress were too often the result of the contented acceptance of existing practice without relation to the advance of knowledge. The purpose of the Society was to provide a means by which the generality of the minds of its members could be brought into relation with the most advanced mind in each particular subject coming within the sphere of medicine. One aspect of that was the coordination of research and the avoidance of the waste which resulted from the failure to bring into relation simultaneous

efforts for the extension of the bounds of knowledge. He would also like to refer to the importance of the continuous education even of the experienced practitioner. In that connexion the British Post-Graduate School had been in process of coming to birth for some years, and fears had recently been expressed lest there might, owing to the financial exigencies of the time, be a miscarriage; but he was glad to say those fears were unjustified. (Applause.) Medical practitioners were the shock troops who maintained the front against disease in the constant warfare which was in progress, and he was profoundly recognizant of the work done by the Royal Society of Medicine.

The PRESIDENT, in reply, said that there was some resemblance between the medical and political professions, in that both were confronted with problems of enormous complexity and difficulty; politicians were faced with the canker of unemployment, and the medical profession was still struggling with that of malignant growth. He believed, however, that both were sufficiently optimistic to think that some day those plagues would be brought under control. The budding politician, however, unlike the medical student, had no curriculum arranged for him. So far as the medical curriculum was concerned, the General Medical Council had been for some years piling Pelion on Ossa, until finally some of the examining bodies had taken alarm at its ever-increasing proportions, and had set up a committee to pursue the fashionable pastime of slimming. He hoped there would be no undue interference with the preliminary scientific subjects: the art of medicine had not yet attained the dignity of an exact science, and a study of the exact sciences should precede that of the inexact.

The President went on to say that twelve years ago Dr. Robert Murray Leslie endowed a fund which enabled the Society to present triennially a gold medal to a scientist who had made valuable contributions to the science and art of medicine. It was difficult to express the delight he felt in being able to hand it that evening to a friend of many years, Sir Thomas Barlow, his old teacher and chief. (Applause.) Sir Thomas was the last survivor of the great Victorian physicians; he knew Jenner and others, and had been attached as physician to three monarchs; he held honorary degrees in law, medicine, or science of eight universities, British and foreign, in addition to being a Fellow of two Royal Colleges of Physicians other than his own, of which he had been President; he was a Fellow of the Royal Society, and his writings had given him a world-wide reputation. The President then, amid applause, handed the medal to Sir Thomas Barlow.

Sir THOMAS BARLOW, in reply, said no man could possibly desire any greater distinction than had been conferred upon him, for the medal expressed the general approval which the Society showed to one of its Fellows. He was particularly thankful to receive the medal from the hands of Mr. Warren Low; it reminded him of the time when they worked side by side at Great Ormond Street, which was one of the happiest periods of his life. He believed that for centuries to come the Royal Society of Medicine would continue to consolidate and develop the science and art of medicine and take its share in maintaining the great traditions of the noble profession of medicine. (Applause.)

Dr. LETHEBY TIDY, who in a witty speech proposed the toast of "The Guests," expressed the pleasure of the Society at the presence of so many distinguished men, including Sir Hilton Young, Sir William Rothenstein, Lord Dawson of Penn, President of the Royal College of Physicians and of the British Medical Association, Sir William Llewellyn, President of the Royal Academy, Professor Blair-Bell, President of the British College of Obstetricians and Gynaecologists, and many others.

Sir WILLIAM ROTHENSTEIN, who responded, said he wondered whether Sir William Llewellyn would agree with him when he looked with envy round the tables of scientific ladies and gentlemen present that evening and reflected that five hundred years ago he and Sir William would have represented the precise thinkers and they the charlatans and humbugs! To-day the position had been largely reversed, and it was the painter who had a stuffed crocodile outside his studio. He took comfort in the thought that medical men, like artists, were fallible. That, indeed, made their profession the more honourable; perfection could be achieved in no walk of life, and the very imperfection of their professions allowed them to concentrate with that energy which permitted ideas to crystallize of themselves. Painters shared one difficulty with members of the medical profession: they too, when sitters came to them, had to pretend to be infallible. One would like to be able to say, "I may make a good painting of you, but I am very doubtful." If, by the grace of God, the result was good, they thanked their stars that they had got through one difficulty, but knew the next would come to-morrow. Perhaps it would be well for them to take both sitters and patients a little more into their confidence. A little more frankness in both professions might be of advantage. In the name of all the guests he thanked the Society for its splendid hospitality.

SOCIETY OF MEDICAL OFFICERS OF HEALTH

ANNUAL DINNER IN LONDON

The annual dinner of the Society of Medical Officers of Health was held on November 17th, when Dr. G. H. PEARCE, the president, took the chair, and a company of nearly 200 assembled.

The toast of "The Public Health" was proposed by Mr. GEOFFREY SHAKESPEARE, M.P., whose first public appearance it was as Parliamentary Secretary to the Ministry of Health. He said that when the history of the post-war period came to be written much would be said about industrial troubles and the blast of world depression, but an even greater phenomenon than this would be remarked—namely, that the health of the nation through these difficult times had not only remained unimpaired, but had made steady progress in every direction. Mr. Shakespeare traced the history of public health in three chapters: the first, the period of the pioneer part-time medical officer (1850 to 1900), who had tackled the problem of environment and stayed the plagues of contagious disease; the second, the early part of the present century, when personal health became also a concern of the public authorities, when specific diseases were tackled, and a great system of preventive work was established under the auspices of the national health insurance service, the school medical service, and in other directions; and the third period, the one which was beginning under the administration of the Local Government Act, 1929. He predicted a fourth period, in which stress would be laid on mental health, on the combating of that new type of nervous and mental disorder to which the pace of life in industry was giving rise, that mass hysteria to which modern conditions rendered the population more and more liable.

Professor W. W. JAMESON, in responding, noted that the present year was the centenary of the Reform Act, along with which came important reforms which paved the way for the public health progress that took place in the nineteenth century. Since the great war the nation had passed through a period almost equal in interest to that of a hundred years ago, and during which great attention had been paid to the administrative machine of public health. Another feature of the post-war period was the health work of the League of Nations, which had commanded more general approval than any other of the League's activities. He stressed the need for a greater pooling of resources for the benefit of the public, and an alteration in the scheme of medical education whereby the practitioner of the future would be enabled to fit himself more readily into the great social medical service that had grown up during the last twenty-five years.

Lord BALFOUR OF BURLEIGH proposed the toast of "The Society of Medical Officers of Health." After referring with regret to the death of Professor Bostock Hill, he went

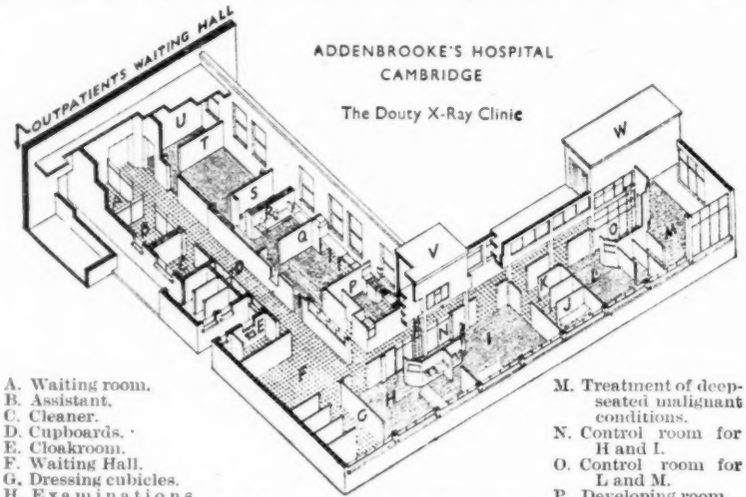
on to speak of the importance of medical officers of health. Although it was true that here and there local authorities were to be found who were not quite convinced of the necessity for the existence of medical officers of health, there had been undoubtedly a great change of attitude on the part of public authorities and the public towards them. His own experience was that medical officers of health performed their duties with high efficiency and with all regard for the best interests of the country. Remembering the difficult work which medical officers had to do, it was imperative that they should have a strong society behind them.

The PRESIDENT referred to the astonishing difference in respect to public health between the state of affairs when the society was founded and the position to-day. Only forty-five years ago a death rate of 28 per 1,000 was regarded in his own county of Yorkshire as quite admirable; to-day it would be described as deplorable. Unfortunately, the medical officer of health could not put before his council the results of his work in terms of financial savings nor even in terms of lives saved, but there was no doubt as to its effectiveness. Looking to the future he foresaw a country in which tuberculous disease and scarlet and typhoid fever would be unknown, and in which the role of the medical man would be very largely preventive. It was the public who needed emancipation from the "bottle of medicine" idea; for many patients, if they received advice only, thought at present that their doctor was not giving them proper attention. Finally, he spoke of the need for hospitals for middle-class patients.

The toast of "The Guests" was proposed by Dr. R. VEITCH CLARK of Manchester, who coupled with it the names of Dr. Alfred Cox, lately Medical Secretary of the British Medical Association, Mr. W. D. Wills and Miss Elsie Taylor (respectively the Member of Parliament and the mayor for the president's own town of Batley), and Mr. T. W. Crowther, chairman of the Heckmondwike Urban District Council. Dr. Cox, who made the principal reply, said that while he viewed with misgiving the domination of local authorities by experts, he felt that they should feel quite safe in accepting the advice of their medical officers, having regard to the nature of their training and the keen desire that all medical men had to ensure public health. It had been one of his objects in life to bring about the best of relations between that part of the profession which was concerned with public health and that much larger part which was engaged in general practice.

THE DOUTY X-RAY CLINIC

The new Douty *X*-Ray Clinic at Addenbrooke's Hospital, Cambridge, was opened on November 25th by Sir Humphry Rolleston. The clinic has been built as a memorial to the late Dr. E. H. Douty, a member of the honorary staff from 1895 to 1897. In most English hospitals the *x*-ray department is lodged in some part of the building ill adapted for the purpose. As a result of lack of space and lack of money many radiologists have to work in conditions which put a premium on enthusiasm. Addenbrooke's good fortune is that it has the space and the money—owing to the generosity of an unnamed donor. It is also fortunate in having, in Dr. Ff. Roberts, an enterprising physician in charge of the *x*-ray clinic. The new *x*-ray building has been constructed especially for radiology, and is no makeshift modification of either garret or basement. Every detail has been carefully considered by Dr. Roberts and the architect, who have been working in close co-operation for the past three years. Together they visited a number of *x*-ray clinics in Germany, which possesses some of the best-equipped and best-constructed radiological institutes in Europe. The new Douty *X*-Ray Clinic, then, is largely based on German models, and will serve as an excellent "negative" for future *x*-ray departments in England. The advice of the National Physical Laboratory has been taken in all matters concerning ventilation and protection.



A. Waiting room.
B. Assistant.
C. Cleaner.
D. Cupboards.
E. Cloakroom.
F. Waiting Hall.
G. Dressing cubicles.
H. Examinations which can be carried out in daylight.
I. Examination of the stomach, lungs, etc., in the dark on the fluorescent screen.
J. Lavatory.
K. Dressing cubicles.
L. Treatment of the skin and of internal organs where deep penetration is not required.
M. Treatment of deep-seated malignant conditions.
N. Control room for H and I.
O. Control room for L and M.
P. Developing room.
Q. Office. Drying and storing room.
R. Examination of films.
S. Fire-proof film store.
T. Radiologists' consulting room.
U. Room for clinical examination.
V. Tower for high-tension transformer supplying H and I.
W. Tower for high-tension transformers supplying L and M.

The isometric drawing reproduced on this page shows clearly the construction of the building. It is built on a simple rectangular plan, which is repeated internally by the two well-lit corridors off which the various offices and rooms open. *X*-ray departments are unfortunately often gloomy, dark places, full of strange noises. The Douty Clinic is a cheerful, light, and airy building. There are two rooms for diagnosis (H and I), and two for therapy (L and M). It will be seen in the plan that the high-tension plant is housed in two small towers away from the rooms in which patients are examined. The controls are worked by a technician in small rooms partitioned off from the diagnostic and therapy rooms. The patient is thus spared the, what must be to him, terrifying noises and mysterious flashes of light usually associated with an *x*-ray investigation. The isolation of the high-tension plant and the effective insulation of all high-tension cables completely eliminates risk of shock. Beneath the couch in the diagnostic room I is a deep concrete pit containing an *x*-ray tube for photographing the chest at a distance of six feet. The other diagnostic room is fitted with a Potter-Bucky couch for the examination of dense parts of the body. The therapy rooms, in accordance with the recommendations of the International *X*-ray and Radium Protection Committee, are lined with sheet lead to protect persons outside from scattered radiation. In one wall of the developing room, which is entered through a maze, two double-doored hatches allow the transmission of films without the necessity of anyone entering the room. One half of the washing tank is in the developing room, and the other half in the radiographer's office. Films to be washed are suspended on a small wagon, which can thus be run through to the radiographer's office if he wishes to view the film before it has been dried. A special cabinet enables films to be dried in twenty minutes, and they are stored in a fire-proof room. There are a great many more details, the significance of which can be fully appreciated only by those who visit the clinic—a visit which should be paid by all who are interested in radiology.

Ireland

Statistics of Northern Ireland

The third volume of the *Ulster Year-Book*, issued by the Northern Ministry of Finance, states that the birth rate for Northern Ireland is higher than that for Great Britain; it has shown a declining tendency during the past half-century, though the fall has been less pronounced than in England and Wales or Scotland. The death rate, on the other hand, has steadily decreased; over the past forty years the standardized rates of mortality in Northern Ireland have decreased by about 40 per cent. The excess of births over deaths in Northern Ireland between 1871 and 1926 was 400,000, but this was quite insufficient to counterbalance the large volume of emigration. Recently, however, emigration has stopped owing to the unfavourable economic conditions in the United States and the Dominions generally. In fact in 1931, for the first time in the history of Northern Ireland, there was a balance on the side of migration. As in Great Britain, there has been a steady increase in the number of town dwellers, with a corresponding decrease in the rural population. Under the heading of population it is pointed out that at the census of 1926 the inhabitants numbered 1,256,561 persons, representing nearly one-third of the population of Ireland, and rather more than one-fortieth of the population of the British Isles. The density of the population is 241 persons to the square mile, as compared with 111 in the Irish Free State and 682 in England and Wales.

Hospitals in County Leitrim

Much resentment was expressed at a recent meeting of the Leitrim County Board of Health, when it was suggested in a report by Dr. Lysaght, medical inspector of the Local Government and Public Health Department, that Leitrim should have no main county surgical hospital, and that patients from the county should be sent to Longford, Cavan, and Sligo for treatment. Some few years ago such a scheme was in contemplation among the high officials of the Department, but when a statement appeared in the public press it was contradicted. A letter from the Local Government and Public Health Department which accompanied the report stated that with reference to the application of the Leitrim Board of Health and Public Assistance for a grant under Section 6 of the Public Charitable Hospitals (Amendment) Act, 1931, for the purpose of improvements to the hospitals in the country, the secretary was directed by the Minister for Local Government and Public Health to enclose for the Board's information a copy of a report which had been received from the medical inspector, Dr. Lysaght, who had visited the county and inspected the different buildings. "It will be observed," the letter continued, "that for hospital work of a major nature such as is usually done in a county hospital Dr. Lysaght recommends that the Board should come to an arrangement with the local authorities in the adjoining counties of Sligo, Cavan, and Longford for the treatment of patients in the county hospitals of these counties. The medical inspector does not recommend that any of the existing hospitals in the county should be closed. They would be continued as district hospitals to deal with minor cases where the period of hospital treatment is likely to be short, urgent and accident cases, and cases in which the journey to an outside hospital might endanger life, also local maternity cases of a normal nature occurring in homes which do not permit of suitable attention and treatment." In the course of his report Dr. Lysaght stated that a scheme of centralization, with one large central surgical and medical hospital for the county, was not practicable, owing to the shape and configuration of the county. They were left with the alternative of amalgamation with the adjoining counties of Sligo, Longford, and Cavan. Under this arrangement the county would be divided into three parts—north, south, and east—the north to be amalgamated with County Sligo, the south with County Longford, and the east with Cavan. The scheme would entail the retention of the district hospitals in the south of the county at Mohill and Carrick-on-Shannon, and another at Manorhamilton. Dr. Lysaght also dealt with the fever hospital accommodation in the county, and made suggestions for improvement.

Medical Appointments in the Irish Free State

In reply to his recent letter to the Local Appointments Commission requesting particulars concerning changes in the method of selecting candidates for medical appointments under local authorities, the Irish Medical Secretary has been informed that:

"In accordance with Section 6 (3) of the Local Authorities (Officers and Employees) Act, 1926, the Commissioners may recommend one, two, or more persons for appointment to an office to which the Act applies. The Commissioners have recently decided that where a local authority wishes to have some freedom of choice in appointments they will send it the names of the candidates who have been placed first and second, or, if the local authority so desires, the names of the first three candidates. The names in either case will be arranged in alphabetical order. Accordingly, it is now the practice of the Commissioners to ask each local authority whether it desires to have one, two, or three names submitted to it, and to state in the particulars of appointment issued to the prospective candidates whether one, two, or three persons will be recommended to the respective local authorities in connexion with the various posts to be filled."

Accompanying this letter were copies of the "Conditions of Appointment"—issued recently in connexion with two medical appointments—in each of which the method of appointment was explained.

Scotland

Health of Scotland

The return of the Registrar-General for Scotland for the quarter ending September 30th, 1932, shows that there were 22,030 births and 13,191 deaths during that period. The births were 2,220 fewer than in the preceding quarter, and the rate of 18 was 2 per 1,000 of population less. Compared with the same quarter of the preceding five years, the number of births and the rate per 1,000 of population were respectively 1,091 and 0.9 below the average. The birth rate in the large burghs of 18.2 was higher than that for the rest of Scotland, which was 17.6, and ranged from 25.5 in Port Glasgow and 23.8 in Coatbridge, to 11 in Arbroath and 10.5 in Berwickshire. Male children numbered 11,232 and female 10,798. The number of deaths was 3,219 fewer than in the previous quarter, and the death rate of 10.8 was 2.7 per 1,000 less. In the large burghs the rate was 10.9 as compared with 10.6 for the rest of Scotland, and ranged from 16.5 in Sutherland and 15.5 in Orkney, to 8.9 in Midlothian and 8.5 in West Lothian. Deaths of children under 1 year numbered 1,397, giving a rate of 63 per 1,000 live births; this was 578 fewer than in the previous quarter, or 18 per 1,000 less. In the large burghs the infantile mortality was 74, as compared with 51 for the rest of Scotland, and it ranged from 138 in Stirling and 102 in Greenock, to 0 in Bute, 20 in Peebles, and 16 in Dunfermline. As to the causes of death, the principal epidemic diseases accounted for 372, or 2.8 per cent., as follows: measles 35, scarlet fever 41, whooping-cough 73, diphtheria 69, influenza 54, cerebro-spinal fever 41, and other epidemic diseases 59. There was a decrease in the number of deaths from each disease, the diminution being especially noteworthy in

measles and influenza. Deaths from all forms of tuberculosis numbered 852, or 6.5 per cent. of all deaths, and were 313 fewer than in the previous quarter. Malignant disease accounted for 1,897, or 14.4 per cent. ; this was 114 more than in the previous quarter. Deaths from the principal diseases of the respiratory system were fewer than in the previous quarter, pneumonia being responsible for 4.6 per cent. and bronchitis for 3 per cent. Accidents of pregnancy and childbirth accounted for 117 deaths, or 23 fewer than in the previous quarter.

Presentation to Dr. Alice McLaren

A presentation was made on November 12th, in Queen Margaret College, Glasgow, to Dr. Alice McLaren on her retirement from active practice after some forty years' medical work in the city. Dr. McLaren, who was born in Edinburgh, early resolved to enter the medical profession, but although the University of Edinburgh had nominally been open to women from 1869, teaching was not provided until 1886. She accordingly took a medical course in London, where she graduated M.B., with first-class honours, in 1890. After a period of study in Dublin and Vienna, she was appointed resident house-physician at Leith Hospital—the first woman to hold such an appointment in any British hospital, and in 1893 she graduated M.D. of London University, being one of the first five women to obtain this degree. In the same year she took up practice in Glasgow, and became an assistant surgeon in the Glasgow Lock Hospital, where, as a member of the board of management, she was later instrumental in bringing about reorganization and improvement. At a later date she was appointed to the visiting staff of the Glasgow Samaritan Hospital. In 1903 she was one of those concerned in founding the Glasgow Women's Private Hospital, now known as Redlands Hospital for Women, where she was the gynaecological surgeon, and where later she became medical superintendent. She was also extra honorary physician to the Royal Hospital for Sick Children, Glasgow, and has carried on a large private practice for nearly forty years.

Central Midwives Board

Out of 162 candidates who sat for the examinations of the Central Midwives Board for Scotland, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, 151 passed. Of the successful candidates 30 were trained at the Royal Maternity Hospital, and 11 at the Elsie Inglis Memorial Hospital, Edinburgh ; 59 at the Royal Maternity Hospital, 5 at Stobhill Hospital, 2 at the Eastern District Hospital, and 2 at the Western District Hospital, Glasgow ; 10 at Govan Maternity Home ; 5 at Bellshill Maternity Hospital ; 5 at Barshaw Maternity Hospital ; 7 at the Maternity Hospital, Aberdeen ; 9 at the Maternity Department, Royal Infirmary, Dundee ; 3 at the Royal Infirmary, Perth ; and the remainder at various recognized institutions.

England and Wales

Society of Apothecaries

A livery dinner of the Society of Apothecaries was held on November 15th, with the new Master, Dr. Cecil Wall, in the chair. This year, and we imagine for the first time in history, the Master and both Wardens of this ancient City Company are Fellows of the Royal College of Physicians of London. Among the guests of the evening were the deans of seven of the metropolitan medical schools: Charing Cross (Mr. Eric Crook), Guy's (Professor T. B. Johnston), the London Hospital (Professor William Wright), Middlesex (Dr. Izod Bennett), St. Mary's (Dr. C. M. Wilson), St. Thomas's (Professor L. S. Dudgeon), and the Westminster (Sir Stanley Woodwark) ; also the Registrar of the General Medical Council (Colonel Norman King), and the Medical Secretary of the British Medical Association (Dr. G. C. Anderson). After the loyal toasts had been honoured and the loving-cups had gone round, the Master, proposing the toast of " The Livery," said that three weeks from that day the Society would be meeting there on the site where it had first met exactly 300 years earlier. It was in 1632 that the present headquarters in Water Lane, Blackfriars, were purchased. The sequence of ownership could be traced back to 1276, when the Dominicans or black friars, acquired the land between the City and the Fleet River from Ludgate to the Thames, and also two lanes within the City ; on this they erected their church and priory buildings. The present hall was built soon after the Great Fire of London. The Society of Apothecaries, said Dr. Wall, had always represented the general practitioners of medicine ; it secured their position under the Apothecaries Act of 1815, and led the way in recognizing the importance of midwifery in their education. He coupled with the toast the honoured name of Sir George Makins, the senior Liveryman, who, in his reply, spoke of the changes in the Society since he took the L.S.A. as his first qualification fifty-eight years ago and later became a member of the Court of Examiners. Sir William Willcox, the Junior Warden, proposing the toast of " The Medical Schools," said that the Society took care of the education of the general practitioner in former days, and did much to encourage the development of medical schools by waiving its legal right to demand a long apprenticeship from candidates for its licence. He welcomed the deans who were present that evening, and sympathized with them in the trials they were going through now that the medical curriculum was once more in the melting-pot. Dr. C. M. Wilson, in reply, excused himself from serious discussion of the curriculum in the midst of a convivial evening. The examination system was often blamed for the faults of the curriculum. Referring to the " heavy mortality " in the final examination, he said that either the test (the examination) or the thing tested (the student's education) must be at fault. In acknowledging the toast of " The Visitors," proposed by the Senior Warden, Dr. Wakelin Barratt, Colonel King briefly touched on the functions of the General Medical Council in regard to medical education and the way in which these are performed, ending with a story to illustrate the lighter side of a Registrar's duties.

Employment of Tuberculous Patients

A Chadwick Public Lecture on the employment of tuberculous patients was given on November 15th by Sir Pendrill Varrier-Jones, medical director of the Papworth Village Settlement and president of the International Tuberculosis After-Care Committee. He said that since most sufferers were aware that to be diagnosed tuberculous meant economic disaster, the tendency was to conceal rather than to reveal the symptoms. Thus, when ultimately diagnosed, most sufferers were incurable. Employers were unwilling to employ such persons because their working capacity varied, and because, also, they might from time to time become infectious and dangerous to their workmates. They were substandard in any case, and liable to become at any time a charge upon an employer's good nature. The consequence was that tuberculous persons found it almost impossible to secure employment in normal industrial conditions. Small schemes for employing the tuberculous in handicrafts and in the manufacture of hand-made furniture were shown to be unsuccessful, and occupational therapy, while valuable as a means of preventing moral deterioration during sanatorium treatment, was useless as a training for remunerative employment. The lecturer insisted that such training must be conducted on correct industrial lines, and gave

an account of the important principles of village settlement practice. He pointed out that in the case of married sufferers it was useless to deal with the individual alone. The family was the unit to be dealt with, and any scheme which omitted this consideration was apt to fail. Only a practical scheme, conducted on business lines and divorced from any suggestion of charity, could produce the incentive to effort without which any employment scheme was bound to fail. Given the right environment, the right mentality would be developed, and tuberculous people could then achieve a remarkably full measure of self-respect and self-support.

CORRESPONDENCE

Post-Graduate Teaching

SIR,—From the tone of articles in the medical press during recent years it may be inferred that there is a growing dissatisfaction with the course of instruction and tests prescribed for the students of medicine. Although a consensus of opinion holds the curriculum to be overloaded, there is unfortunately no unanimity in the proposals to rectify the error. It may be of interest, therefore, for those engaged in teaching students and post-graduates to be acquainted with the replies to a questionary which was lately circulated to practitioners by the Faculty of Medicine of the University of Sheffield.

Recognizing the inadequacy of the post-graduate teaching and consequent unsatisfactory attendances, the honorary staffs of the voluntary hospitals decided to organize a scheme whereby each practitioner might, as a member of a small group, obtain bedside teaching in medicine, surgery, and gynaecology and obstetrics, and, in addition, practical instruction in one of the special subjects.

In order to ascertain their requirements an explanatory memorandum was sent to all the medical men practising in the city and surrounding districts, together with a stamped postcard, on which the questionary reads as follows.

Do you wish to attend?

Which main subject do you choose for the first session?

Medicine
Surgery
Obstetrics and Gynaecology

Which specialty do you wish to take (in addition)?

Ophthalmology
Ear, Nose, and Throat
Dermatology
Radiology

Which institution do you wish to attend?

Royal Infirmary
Royal Hospital

Do you prefer Sunday morning or a weekday afternoon?

If you do not enrol for the course, do you wish to receive notices of any further courses that may be arranged in the future?

Signed.....
Address.....

The response is interesting and in some respects surprising. Out of about 600 medical men to whom the circular was sent roughly 100 have enrolled for the course. The interesting part, however, is not so much the increase in numbers, which is considerable, but the relative demand for the various subjects. The subjects and the percentage of applicants for each are as follows:

Medicine	58	Dermatology	56
Surgery	12	Ear, Nose, and Throat	19
Obstetrics and Gynaecology	30	Eyes	16
		Radiology...	9

These practitioners are drawn from practically every type of school in the British Isles. It is reasonable to assume that these men find themselves short of those things which were insufficiently provided in their curriculum. True the numbers are small, but may they not "show which way the wind blows"? If other centres, or perhaps some central body such as the British Medical Association, were to institute inquiries on a larger scale, suggestions of some value might be forthcoming to those who have either the curriculum or the arrangement of post-graduate instruction under consideration.—I am, etc.,

Sheffield, Nov. 15th. RUPERT HALLAM.

Medicine at Cambridge

SIR,—Altogether apart from the domestic problems of Cambridge University—which are certainly not matters upon which persons who are not teachers or examiners of that university need express opinions—the subject under discussion in the Senate is of such general interest that an even fuller summary than you have given would have been welcome. In particular, one would have welcomed a more explicit definition of the adjective "vocational," which seems to have been used by the opponents of the proposals as a term of abuse. It would appear from your summary of Professor A. V. Hill's argument that vocational or technological teaching is incompatible with "a general scientific education, in which the principles of science, the method of experiment, and the judging of evidence are emphasized." Inferentially, then, vocational or technological teaching is teaching primarily or solely directed to the training of persons to perform properly certain acts, believed to be useful in a vocation or trade:

"Theirs not to make reply,
Theirs not to reason why!"

If that *is* the explicit definition, then no human being is likely to maintain that vocational education should be tolerated in a university (or in a college of technology); it is also quite incredible that the proposals would ever have been submitted by teachers of a university.

Is it possible that some confusion of thought has arisen? Whether teaching is educational in Professor A. V. Hill's sense or vocational in the defined sense surely depends not on the subject matter, but on the way it is taught. No doubt it is flattering to our profession, and natural enough, that a distinguished man of science, not himself a member of it, should fear that the practical applications of medical knowledge will have such a glamour for young people that they will ignore general principles. But the assumption, although flattering to our professional self-esteem, is less flattering to the teachers.

I am, I suppose, a technological teacher, inasmuch as my pupils have chosen a particular vocation and seek knowledge useful to them in exercising that vocation. I hope that my teaching does not really fall under the above definition, but I *am* quite sure that a good deal of the teaching I give might have been more satisfactorily imparted to students much earlier in their careers. It is not really necessary to be able to diagnose a case of small-pox or typhoid, or even to have seen a patient suffering from either disease, in order to understand those principles of science, those methods of experiment, and the judgement of evidence which in the past two hundred years have been used, or misused, in the formation of opinion on the prevention of small-pox and typhoid. Indeed, the stock of definitely technical knowledge a student must possess in order to understand a discussion of the rights and wrongs of, say, vaccination is much less than needed to make the most elementary account of, say, colour vision really educational.

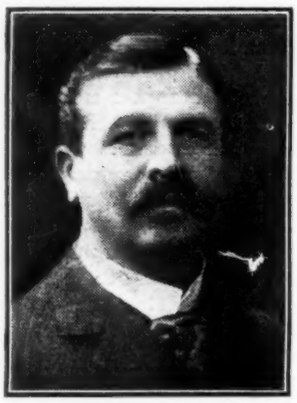
There is surely within the ambit of medicine a vast amount of knowledge and opinion which, in spite of the fact that it (or some of it) is vocationally useful, can, if carefully selected, serve to illustrate the principles of scientific reasoning. Is there not an element of intellectual

snobbishness in the attempt to make a dichotomy between subjects of "educational" and subjects of "vocational" importance?—I am, etc.,

Loughton, Nov. 21st. MAJOR GREENWOOD.

Dr. Babinski

SIR,—In connexion with the death of Dr. Babinski, to which reference is made in your issue of November 12th, I should like to add a few words about his greatness as a teacher. I had the privilege of being present at his visits to the Hôpital de la Pitié for three months in 1907, and I can say without hesitation that his clinical demonstrations were the most fascinating I have ever attended. He was a born teacher, and his dramatic methods made his clinics thrilling and unforgettable. He was a magnificent-looking man, who inspired his patients with confidence and his pupils with devotion.



J. BABINSKI.

His patients, both male and female, came before him completely naked, which made it possible to demonstrate their paralyses, anaesthesias, and reflexes rapidly and thoroughly. I believe that his discovery of the extensor plantar reflex and numerous other differential signs of organic nervous disorders, and of the importance of the ankle-jerk in tabes, peripheral neuritis, and sciatica, were in part due to this, as in English outpatient departments at that time the voluminous clothes, particularly of female patients, made an adequate examination often very difficult. Though a pupil of Charcot, he was the first to show the error of his master's teaching on hysteria. He proved, for example, that the three stages of the hysterical fit which formed the centrepiece of Charcot's description of hysteria were the result of direct suggestion, and, in confirmation of this, with the death of Charcot the hysterical fit he had described and illustrated disappeared from the Salpétrière. Babinski was never tired of demonstrating that hysterical anaesthesia is not a spontaneous manifestation, but is always induced by suggestion of the examining physician.

Babinski's death removes almost the last of the group of great clinicians who made Paris at the beginning of the present century a centre of extraordinary attraction for anyone interested in clinical medicine and neurology.—I am, etc.,

November 15th. ARTHUR F. HURST.

Poliomyelitis: Differential Diagnosis

SIR,—In the interests of accurate diagnosis may I take leave to comment upon the letter by Drs. Craig and Lowe in your issue of November 12th, headed "Poliomyelitis in a school"?

The story presented is that of a boy who, having been perfectly well the previous day, complained of backache during the night, and at 8.30 next morning presented the physical signs of a functionally complete transverse lesion of the spinal cord in the upper thoracic region—flaccid paralysis of trunk and lower limbs, loss of sphincter control, and loss of all forms of sensation up to a level an inch above the nipples. The temperature was 100°. The writers record their opinion that the differential diagnosis at first appeared to be between transverse myelitis, cerebro-spinal meningitis, or anterior poliomyelitis. The first lumbar puncture gave a fluid which was blood-stained—apparently accidentally. This, they state, temporarily added to their difficulties. Twenty-four hours later the fluid was "still under pressure, but practically clear." It was after this that "the definite diagnosis of polio-encephalitis was made."

I submit that the story and clinical picture of this case are characteristic of an acute transverse myelitis, and that the diagnosis of poliomyelitis is untenable.

Poliomyelitis is a disease which, both in its local incidence and in its manner of onset, is true to type. It strikes not at the whole transverse section of the cord, but at the anterior horn cells. The picture, in spinal cases, is that of lower neuron paralysis. Sphincter control may be affected when the anterior cornua of the lumbo-sacral enlargement are involved, but there is no sensory loss. In its onset poliomyelitis advances through a phase of constitutional disturbance and meningeal irritation, lasting, as a rule, several days, to that of paralysis, which does not therefore come as a "bolt from the blue." The spinal fluid microscopically and chemically examined in the acute stage usually shows characteristic changes.

I have met with several cases of acute myelitis, of the type to which, I believe, the case of Drs. Craig and Lowe belongs, during the past few years. They are characterized by an acute onset without preliminary constitutional disturbance; the spinal fluid is clear, and may show little deviation from the normal, though a slight lymphocytosis is the rule. There is no evidence, so far as I know, for supposing these cases to carry any risk of infection to the community.—I am, etc.,

London, W.1, Nov. 17th. C. P. SYMONDS.

Irradiation as a Preventive in Precarcinomatous Conditions

SIR,—In the recent report from the Imperial Cancer Research Fund Dr. Cramer comes to the conclusion "that the application of radium to a precancerous area of skin delays, or even inhibits, the development of malignancy."

This is of especial interest in the case of carcinoma of the cervix, as it suggests that the production of artificial menopause by means of radium in the cervix and body of the uterus may prove to be a prophylactic against this common form of cancer. I would therefore once more ask that all medical men who have patients on whom this treatment has been carried out will keep in touch with them, in order that at the end of a number of years sufficient statistical data can be obtained to see if there is any clinical substantiation of the experimental evidence referred to in the above-mentioned report.—I am, etc.,

London, W.1, Nov. 15th. MALCOLM DONALDSON.

Tuberculosis of the Larynx and Artificial Sunlight Treatment

SIR,—Sir StClair Thomson does not seem to be aware of the most successful method of treating tuberculosis of the larynx, and no less of the mouth—namely, with a small Kromayer lamp designed for introduction into the mouth to give local intense but carefully controlled irradiation of the disease. Such a lamp, designed by Eidinow, affords a method of treatment which can be perfectly graduated, and can yield results equal to those produced by the application of the Kromayer lamp to lupus of the skin. I saw recently at the Finsen Institute cases of tuberculosis of the mouth cured by Lomholtz's new and admirably designed Finsen arc lamp, but this is far more expensive than the Kromayer throat lamp. I am astonished at the expenditure of £518 for lamps

obtained from Copenhagen and £188 for structural alterations at the King Edward VII Sanatorium. Given the current, everything requisite for general light baths might have been had in this country for about £100. I am no less astonished at treatment being given "extending over five months, with the regular use of a bath of as much as thirty minutes' duration, given daily except Sunday." It is not surprising that "in several instances the baths had to be abandoned owing to loss of weight, or to their being followed by pyrexia or fatigue."

Surely such are the ordinary results of overdosage with light.

Sir StClair disparages the use of light treatment, and attributes any result obtained to suggestion. Our experience at the London Clinic is based on one to two thousand treatments a week, and confirms the opinion of others with similar experience that intense but carefully controlled local doses of ultra-violet rays are most efficacious for lupus, septic wounds, boils, carbuncles and acne, eczema, alopecia, chilblains, and for removing naevi. We find light treatment accelerates the cure of chronic ulcers of the leg brought about by the use of elastoplast bandages and injection of varicose veins. General light baths, coupled with intense local infra-red baths—we use the gas clinical lamp for these—do much to relieve rheumatic and other painful conditions.

In place of saying anything about our experience with cases of tuberculosis I append a table taken from Dr. Lissant Cox's report for 1931 on the prevention and treatment of tuberculosis in the administrative county of Lancaster, a report which confirms the experience of previous years on the utility and economy of light treatment given to out-patients at dispensaries, "81 per cent. of whom were able to continue their normal occupation during treatment."

Form of Tuberculosis or Part of Body Affected	Number of Cases (Active on Commencing Light Treatment) that became "Quiescent and Apparently Well"	Average Duration of Light Treatment	For Comparison: Average Duration of Disease *before* Commencing Light Treatment
		Months	Months
Skin	38	14.26	92.73
Adenitis with abscess formation and skin involvement	117	9.76	19.22
Adenitis without softening	71	9.08	30.92
Bones, joints, and spine	19	13.07	41.02
Abdomen	13	9.90	15.28

There is abundant confirmation of the beneficial effect of light treatment on debilitated children.—I am, etc.,

LEONARD HILL.

London Light and Electrical Clinic,
Nov. 21st.

Radiology in Dentistry

SIR,—In his interpretation of what I meant when I spoke of the need for the medical practitioner to have an unbiased and independent opinion on the radiological condition of a patient's teeth, Mr. Norman Ainsworth affects an innocence or assumes an inexperience of a type of dental practice to which I do not wish to give too great a prominence, because it does not represent the attitude of the majority of the dental profession.

A patient, suffering from a condition which his doctor suspects to be due to dental sepsis, yet whose teeth his dentist on his clinical examination and his own radiographs has said are sound, is perfectly justified in getting an independent opinion. Most medical men have had the experience that in certain cases the use of this reference has been justified by the discovery of a septic focus which had been neglected or overlooked, and that is why the practice exists. On the other hand, many dentists find such an independent opinion invaluable in support of their treatment, particularly when attempts are being made in one way or other to force them to do something which they believe to be unsound. Such an opinion does not in any way interfere with the good feelings between the dentist and his patient. That the need exists for such an unbiased observer there is no question, in view of the contrary opinions often given by different dentists. Even in those cases in which the evidence would appear to be very definite, extraction is the treatment advised by the one and retention by the other.

The paragraph in my paper to which Mr. Ainsworth takes particular objection should be read in the paper to obtain its true significance. He says: "radiographic diagnosis is built on clinical experience," and, "the radiologist who has no opportunity of correlating his radiograms with history, detailed symptoms, and morbid anatomy cannot call his vast collection of skiagrams 'experience.'" I quite agree with him, and the sooner such men are prevented from using the title "radiologist" the better. The value of a radiologist's collection is that in connexion with his work he frequently consults it and is therefore constantly reminded of the clinical history, pathology, and radiographic appearances of cases which he has examined: without this knowledge the collection is worthless, except perhaps for the demonstration of certain typical appearances. He says:

"I have in my practice a patient with a demonstrably vital tooth labelled 'dead, septic, apical abscess' by a radiologist whose ability I hold in high esteem."

In these circumstances I should advise him to extract the tooth. I have vivid recollection of the death of a patient from septicaemia in which such evidence was neglected until an acute flare-up occurred.

I am sorry Mr. Ainsworth takes the view that to refer a patient to a radiologist is to do so over the dentist's head. This, I am sure, is not intended, any more than when the medical practitioner asks for some other radiographic examination; and it is often only because of the radiologist's evidence that the patient is referred to the dentist.—I am, etc.,

JAMES F. BRAILSFORD.

Birmingham, Nov. 21st.

SIR,—I confess that I cannot understand Dr. Brailsford's aggressive attitude towards dentists who act as their own radiologists. For many years radiologists as a whole took no real interest in dental radiology, and most of them supplied dentists not only with indifferent films, but with reports often of doubtful value, or, more usually, with no report at all. This apathy of radiologists towards a very important and difficult branch of radiology led to many dentists, who had been ill served, doing the work themselves, and it is not likely that they will now refer their work to radiologists except in special instances. I venture to say, from a very large experience of dental radiology, that the dentist of to-day takes better average films and understands what he sees in them better than the radiologist, and the reason is that he has a more intimate acquaintance with the anatomy of the jaws and a closer knowledge of the disease he is investigating.

If we radiologists wish to recover some of the work which, through our indifference, we have lost, then we must prove to dentists that we are better radiologists in their particular branch than they are themselves. And we shall do that only by improving our technique and by making a special study—for the information will not come to us intuitively because we happen to be medically qualified—of dental diseases, and especially of the relation of chronic jaw infections to general diseases. Dental

surgeons, in my experience, are ready to refer special cases to us if, in their opinion, they think we know what we are doing and are likely to be of help to them, and, further, if by doing so the best interests of their patients will be served.—I am, etc.,

STANLEY COLYER, M.D., D.M.R.E.

London, W.1, Nov. 21st.

Injection Cure of Cyst of the Testicle

SIR,—On February 8th, 1930, I published in the *Journal* an article on the cure of hydrocele of the tunica vaginalis by the injection of quinine and urethane. Some correspondents inquired whether this method was applicable to cysts of the testicle or epididymis. I replied that, while I had no long personal experience, I considered that the results should be as satisfactory as those achieved in hydrocele.

I have recently seen a patient who had a cyst of the testicle, about the size of a hen's egg, which had not been treated in any way. In February, 1929, the cyst was tapped (the fluid being slightly milky) and injected as if it were a hydrocele. At the present time, three and a half years later, there has been no further trouble. A small nodule about the size of a pea can be felt at the upper pole of the testicle, representing the remains of this cyst. It would appear that the question can now be answered definitely in the affirmative.—I am, etc.,

Newcastle-on-Tyne, Nov. 16th. F. C. PYBUS.

Dressing of Wounds

SIR,—In his letter (November 12th, p. 898) I think that Mr. A. S. Blundell Bankart does less than justice to the maggot. During the war in certain parts of the line it was firmly held that a wound writhing with laudable maggots was safe as regards anaerobic gas-forming organisms, provided that the maggots were present before there was any clinical evidence of the anaerobic infection. In periods of stress maggot infection was an important factor in assessing the order of urgency for operative treatment of men with wounds in the breeches area. This practice was based on general and unscientific observation. We did not then have any published work to vindicate the maggot's use in wounds.—I am, etc.,

Stirling, Nov. 16th. W. B. G. ANGUS.

Research in Mental Disease

SIR,—Now that you have published several letters deriding laboratory research in mental disease, may I be permitted to advance another point of view?

Reference is made to the "new psychology" as if it were a panacea for all mental disease, but when one begins to investigate this new vision one discovers quite a number of "psychologies," each with special shibboleths of its own. First, we have the great trinity—Freud, with his ego-super-ego-id; Jung with his collective unconscious-persona-anima; Adler, with his "masculine protest." Then there are fervent disciples of McDougall, Pastor Pfister, Kempf, Stekel, Rank (trauma of birth!), Groddeck, etc. One must not forget to mention, to complete the list, a "psychology" based on the doctrine of dialectical materialism, which I understand is becoming fashionable in U.S.S.R. at the present time. The followers of Watson deny "mind" altogether. Professor McDougall regards behaviourism as a "most misshapen and beggarly dwarf," and he cannot "make head or tail" of some of Freud's tenets, describing them at intervals as "very peculiar," "examples of perverted ingenuity," "fantastic," "obscure," "of the utmost vagueness," etc. Professor Freud cannot follow Professor Jung now that the latter "aspires to be a prophet." Professor Jung convinces himself that his interpretation of a dream is nearer the truth than either Freud's or Adler's, and so on *ad infinitum*.

In the present muddled state of knowledge psychologists cannot agree as to what an instinct is, how many of them there are, or, indeed, if there are any at all. To some authorities the words "mind," "idea," "sensation," "consciousness" are anathema; others are not at all averse to using these, and even add more—such as the foreconscious, the co-conscious, the unconscious, and the unconscious (psycho-analytic variety). Is it surprising, then, that medical officers of mental hospitals are a little sceptical (only at times) of the "new psychological approach"? Some physicians derive a peculiar sense of satisfaction in being able to say that the suicidal tendency of a melancholic is due to sadism directed against a loved object that has been introjected within the ego of a person who suffers from libido-fixation at the oral and anal narcissistic stage, but one would like to see the practical utility of this discovery when one proceeds to treat a melancholic in the ward of a mental hospital.

Admittedly, biochemical changes may be only incidental or secondary, but a similar criticism can be applied to any discoverable psychological mechanism. Early cases of dementia paralytica have been treated by psychological methods. A visit to the laboratory would have saved the psychologist the trouble of searching for repressed complexes in such a type of "neurosis." I do not wish to depreciate the psychological or sociological approach, and it would be irrational to omit them, but it is just as irrational to omit an investigation of all the possible physical aspects of a psychosis. The very same psychic conflicts and environmental stresses make a psychotic of one person, a psychoneurotic of another, leave another apparently unscathed, and give rise to a genius in a fourth case. Here there are physical factors to fathom. They may be of a biochemical or of an endocrine nature, but only with the aid of laboratory investigation will the problem be solved.—I am, etc.,

I. ATKIN,
Assistant Medical Officer and Pathologist to the Park Prewett Mental Hospital.

Basingstoke, Nov. 14th.

The Medical Profession and the Economy Campaign

SIR,—Whatever view may be taken as to the necessity or otherwise of the present economy campaign, there can be no doubt that the reduction of the standard of life which is necessitated by it is liable to cause definite deterioration in both physical fitness and resistance to disease. Even with prices as they are to-day a sufficiency of food of the right sort implies a considerable weekly expenditure. Dr. G. P. Crowden, writing in the *Lancet* in April, 1932, on "The minimum cost of physiologically adequate diets for working-class families," regards 7s. a week as the minimum cost of the food necessary for a labouring man. Dr. Caradoc Jones, as the result of a social survey carried out under the auspices of the University of Liverpool, puts it at 6s. 3d. The members of the Advisory Committee on Nutrition of the Ministry of Health, in a report on the diets in Poor Law children's homes (1932), states that the food they recommend for such children will cost 4s. 6½d. a week, provided that all provisions are bought at contract prices.

Now it must be evident that if the above statements are correct a good many families have not at the present time enough coming in week by week, after the rent is paid, to provide themselves with a sufficiency of food, even if we assume that nothing is being spent on cleansing, warming, lighting, clothing, and other necessities.

It must, of course, be admitted that in cases of unemployment of short duration previous savings in money or kind may be drawn upon and some amount of assistance from relations and friends looked for. But the present prolonged period of unemployment, the impoverishment of those around, and the application of the Means Test make these adventitious sources of income negligible in many cases, with the result that the family has to depend entirely upon unemployment benefit or public assistance relief, which, as has already been shown, are entirely insufficient to keep their recipients in physiological health.

Because the members of the medical professon can alone be fully cognizant of the importance of the issues involved, it is, in our opinion, their duty to do their utmost to protect their fellow countrymen, and especially the children of the nation, from that physical degeneration which is certain to follow a deficiency of the right sort of food. It is of the greatest importance that the standard of our national stock shall be maintained, and it is the object of this letter to urge upon our colleagues the necessity for dealing with every case of malnutrition due to poverty that comes before their notice, by reference with a brief note to the relieving officer, as this official is bound by Act of Parliament to provide nourishment when this is needed.—We are, etc.,

SOMERVILLE HASTINGS,
CHARLES W. BROOK.

London, W., Nov. 16th.

The School Medical Service

SIR,—All who are interested in, and still more all whose work lies in, the school medical service, will welcome Dr. R. H. Crowley's conception of future improvements in the service, in the *Journal* of November 12th. But this conception will of necessity take some time for realization, and meanwhile I think it may be worth while to consider the question of whether the service is now as perfect as it can be, and, if not, how it may be improved.

The school medical officer, from the day of entering the service to the day of leaving it, will never again, in all probability, receive further instruction unless he sacrifices his annual holiday to it. The heresies of 1904 are only too likely to remain the heresies of 1940. And if it is difficult for a general practitioner in continuous contact with all sorts of diseases to keep up to date, how much more difficult is it for the school medical officer, whose only experience is derived from the examination of some ten "normal" children an hour! Few are likely to be so well equipped for recognizing the abnormal, and few so badly for assessing its significance.

The remedy is easy, and would cost nothing. First, intermittent post-graduate courses should be a *sine qua non* of any public clinical appointment. Secondly, since the school medical service and the old Poor Law hospitals are under the same control, it should be easy to bring the two together by encouraging the employment of the clinical medical officers as visiting physicians or registrars to the hospitals. Thus could the service be made more efficient and more likely to attract men of clinical ability.—I am, etc.,

J. L. NEWMAN.

Southampton, Nov. 14th.

"Excitability: A Cardiac Study"

SIR,—The admitted mental displeasure suffered by your reviewer of my book, *Excitability*, appears to have led him to make misstatements of fact. Thus, no attempt has been made in my book to harmonize religion and science; and the remarks made on celebration of the Mass were not made apropos of the actions of 40 per cent. alcohol. Instead it was pointed out that canon law insisted on the celebrant taking a potent wine on an empty stomach. After that, it was merely necessary to know what wine may then do and to give religious legislators credit for sincerity to appreciate the point that such a practice would long ago have been stopped if alcohol solely augmented our "lower" emotions.

As regards my opinion of fellow physiologists, nowhere in the book is any low opinion expressed. On the contrary, I have throughout expressed my admiration of the ingenuity of their hypotheses, and admitted that none better could be formulated under the circumstances. At the same time, when the presumption is made that a really rhythmical tissue is quiescent, the hypothesis which explains its behaviour, however ingenious it may be, cannot be right.—I am, etc.,

W. BURRIDGE.

London, W.2, Nov. 15th.

"Triplet and Twin Family"

SIR,—In your issue of March 8th, 1890, Dr. W. C. Grigg described a very remarkable family history of triplets in five generations. The family came from a Wiltshire village, and it is stated that they were known in the village as "the triplet and twin family." I should be most grateful if any medical man in Wiltshire could bring me into touch with this village and family, so that we may discover what has occurred since the date of publication of the case.—I am, etc.,

KARL PEARSON.

Department of Applied Statistics,
University College, W.C.1,
November 17th.

Obituary

JANE E. WATERSTON, M.D., F.R.C.P.I.

We regret to announce the death on November 7th, at Capetown, South Africa, of Dr. Jane E. Waterston. Dr. Waterston took the diploma of L.R.C.P.I. in 1879, obtained the M.D.Brux. and the L.R.C.S.Ed. in 1888, and the F.R.C.P.I. in 1925. She was Government official visitor to the Valkenberg Asylum, Cape Colony, the old Somerset Hospital, and the Robben Island Lunatic and Leper Asylums, Capetown.

A correspondent writes: Dr. Waterston was one of the first students to be educated at the London School of Medicine for Women after its opening in 1874. She had already spent seven years in Africa as a teacher, and thus came to her studies with a full appreciation of their importance as a means of fitting herself for a wider sphere of influence in the African continent. At that time there were serious limitations to the scope of practical medical experience for women, but what was lacking in opportunity was amply reinforced by zeal and by diligent work, and the example set by Dr. Waterston will be recalled by her contemporaries. Early and late in the dissecting-room, at lectures, tutorials, and in private study, she was apparently untiring. Yet, if one was asked if she was a favourite in her student days, I fear we should have to answer "No"; she was too pronounced in the assertion of her own point of view. A born leader, and, from her strength of character, a power in the college, she soon showed that her uprightness and fairness of judgement were to be relied upon, as were also her helpfulness to younger students and her loyalty to those whom she counted as her friends. No one was more enthusiastic than Miss Waterston when the Royal Free Hospital opened its doors to women students, and when the Royal College of Physicians in Ireland resolved to admit women to its examinations. In Africa she was honoured by all, for her

high attainments, for her helpfulness, and her honesty of character. So constantly did she assist the needy that she remained poor to the end of her days.

The death is announced of the Hon. James John Guerin, M.D., emeritus professor of clinical medicine in the University of Montreal, and formerly mayor of Montreal. He was born in July, 1856, and graduated in medicine at McGill University in 1878. He was elected a member of the Legislative Assembly of the Province of Quebec in 1895, and entered the Quebec Cabinet two years later. Dr. Guerin was a Fellow of the Royal College of Physicians of Canada, and in 1912 the University of Dublin conferred upon him the honorary degree of LL.D.

We have to announce the death of Dr. Francis Edward Townsend. Educated at Haileybury and at Queen's College in Cork, where his father was professor of medicine and his grandfather a general practitioner, Dr. Townsend graduated M.D. and M.Ch. at the Royal University of Ireland in 1886. In the following year he went to Normanby, where he remained during the whole of his professional life. He was surgeon to the Eston Hospital, certifying factory surgeon, surgeon to the Post Office, and a Past-Master of the Ferrum Lodge, Middlesbrough. He was the eldest of seven brothers, two of whom were in the Army and two in the Navy during the war. His loss will be severely felt in Normanby and in the surrounding area of Cleveland.

We regret to announce the death on November 8th, at his residence in Portland Place, Carlisle, of Dr. Charles William Donald. He had an attack of angina pectoris shortly after attending the memorial service to Dr. Lediard in Carlisle Cathedral, and succumbed a few days later. Dr. Donald, who was 61 years of age, was an Orcadian. He graduated M.B., C.M. at Edinburgh University in 1892, and took the F.R.C.S.Ed. in 1899 and the M.D. in 1904. Coming to Carlisle in 1901 in partnership with Dr. Henry Barnes, he carried on the practice after Dr. Barnes retired from active work. He rendered valuable service on the honorary staff at the Cumberland Infirmary, where the Governors appointed him assistant physician in 1904, in succession to Dr. Bird. On the death of Dr. Bird in 1916 he was appointed senior physician. He was also police surgeon for the Cumberland Ward of the county. When at Edinburgh Dr. Donald excelled in various forms of athletics, including boxing. His adventurous temperament induced him to accompany the Scottish Geographical Expedition to the Antarctic as a medical officer and scientist. The researches he made on the expedition led to the publication of a paper on "The penguins of the Antarctic," and he several times delivered lectures in Carlisle on the Polar regions. Dr. Donald was in South Africa during 1899–1900 as civil surgeon in the Boer war, being attached most of the time to the 4th Mounted Infantry. During part of the war of 1914–18 he was in charge of the typhoid section of No. 17 General Hospital, near Alexandria, and on returning home attended almost daily at Chadwick V.A.D. Hospital.

The following well-known foreign medical men have recently died: Dr. Guido Tizzoni, formerly professor of general pathology at Bologna, who discovered anti-tetanic serum; Dr. Samuel Goldflam, the doyen of Polish neurologists and pupil of Charcot, aged 80; Professor Julius Schreiber, formerly director of the medical policlinic at Hamburg, aged 85; Professor J. Hoppe, a Cologne ophthalmologist, and an authority on trachoma; Dr. Rudolf Matzenauer, professor of dermatology at Graz; Professor Ludwig Rütimeyer of Basel, an authority on diseases of the stomach; Dr. Karl Partsch, professor of surgery at Breslau; and Dr. Edward Wyllys Taylor, emeritus professor of neurology, Harvard Medical School, and formerly editor of the *Boston Medical and Surgical Journal*, aged 66.

Medico-Legal

AN IMPOSTOR CONVICTED

James Arthur Thompson, described on the calendar as "aged 41, ship's doctor," pleaded guilty at the Manchester Assizes last week to nine counts of unlawfully procuring morphine, and of false pretences. His real name was stated to be Eric Ronald Cox, a native of Leicester, and his true age 36. By posing as a medical man he obtained supplies of morphine from Manchester doctors. When arrested he had a letter showing that he had applied for a position as ship's doctor with a Liverpool shipping firm. He was found guilty, and sentenced to twenty months' imprisonment.

Medical Notes in Parliament

[From our Parliamentary Correspondent]

A new session of Parliament was opened by the King on November 22nd. The speech from the Throne announced the coming introduction of measures dealing comprehensively with unemployment insurance and also with Scottish administration, rent restriction, London passenger transport, and probably with constitutional development in India. The speech declared that any provision for unemployed persons should not only afford material assistance but should also be designed to maintain their morale and their fitness to resume work. Speaking later in the House of Commons, Mr. Ramsay MacDonald said these points would also be the subject of legislation. No legislation of more direct medical interest was specified in the speech.

Silicosis

On November 15th Mr. E. Brown, replying to Mr. D. Grenfell, said that silicosis was not a notifiable disease, and the only figures with regard to it were those of cases in which compensation was paid under the Workmen's Compensation Act. The number of such cases in coal mines between February 1st, 1929, the date when the Various Industries (Silicosis) Scheme came into operation, and the end of 1931, was ninety-one, including twenty fatal cases. Figures showing the number of cases in each coalfield were only available for 1931. In that year compensation was paid in the fifty-two cases which arose as follows: South Wales, five fatal and thirteen disablement cases; Monmouth, five fatal and twenty-one disablement; Somerset, one fatal and two disablement; Staffordshire, one fatal and one disablement; Yorkshire, two disablement; and Lancashire, one fatal case. This made a total of thirteen fatal and thirty-nine disablement cases in the year.

Mr. Brown also informed Mr. Grenfell that the Coal Mines Act required the use of efficient means of preventing the escape of dust from power drills when used for drilling in ganister, hard sandstone, or other highly siliceous rock. Active measures continued to be taken to ensure effective compliance with this requirement, to ascertain which dusts were injurious to health, and in what circumstances, and to secure the use of practical and effective means of suppressing them.

Mr. Brown further stated, on the same date, that the stone dusting of colliery roadways as an essential protection against coal dust explosions had been generally enforced by regulation for nearly twelve years. It had proved remarkably effective, and he knew of no evidence that the practice had been injurious to health. The suitability of the dust used was constantly watched by inspectors of mines. In coal mining the development of disablement or fatal cases from silicosis was usually a matter of many years. It was very difficult, therefore, to relate the case fully and reliably to the working and medical histories of the victim, and at present the evidence in the very few cases not definitely associated with the use of power drills in siliceous rock was not conclusive. The condition of the lungs known as anthracosis was not specifically related to the use of power drills.

Recent Outbreak of Foot-and-mouth Disease.—In reply to Mr. William Nicholson, on November 16th, Dr. Elliot said that inquiries into the recent outbreaks of foot-and-mouth disease in Lincolnshire and Leicestershire had failed to establish the source of infection. In reply to Mr. Price, he stated that foxes were not susceptible to foot-and-mouth disease. Like other non-susceptible animals, birds, vermin, or even human beings, foxes might possibly carry infection mechanically, but it had never been established that the disease had been spread through them.

Mental Treatment Act, 1931.—Sir Hilton Young told Mr. Atkinson, on November 16th, that the Mental Treatment Act came into operation on January 1st, 1931, and during that year 3,984 persons were received as voluntary patients under Section 1 (1) and 2,420 left; fifty-five became temporary patients and 205 were certified. The number turned into compulsory patients under Section 3 (2) of the Act was negligible; a precise figure could not be given without an examination of a large number of documents, and this could not be undertaken at the present time.

Criminal Lunatics.—Mr. Oliver Stanley stated, on November 17th, that 312 persons at present in Broadmoor Criminal Lunatic Asylum were found by juries to be insane upon arraignment, and thirty-nine other persons now there were certified insane while awaiting trial or on remand.

Notes in Brief

On November 15th Mr. Duff Cooper furnished Captain Balfour with reasons why the military units on Bermuda did not receive medical facilities from the civil medical staff.

Universities and Colleges

ROYAL COLLEGE OF SURGEONS

Annual Meeting of Fellows and Members

The annual meeting of the Royal College of Surgeons of England took place on November 17th, with the president (Sir Holburt Waring) in the chair. The necessary quorum—thirty—was not secured, and therefore the usual resolution, that Members should be represented directly on the Council, could not be voted upon, though the president allowed it to be proposed and seconded.

The President, in presenting the annual report of the Council, referred briefly to some of the principal items. He commented first upon the primary examinations for the Fellowship which were held last year in Canada and Australia. The College wished, he said, to do everything possible to enable surgeons over-seas to attain Fellowship with the least disturbance of their private economy; and he believed that in South Africa and in India there were ideas on the same subject. The Council had raised objections to the petitions of the chiropodists and the osteopaths to the Privy Council for the granting of Royal Charters, and the petitions had been unsuccessful. With regard to research, he mentioned the progress made in connexion with the establishment of the research farm at Downe, in Kent. The buildings were being erected under a trust endowed by Sir Buckston Browne. Delay had occurred owing to the lack of supplies, in that remote country district, of gas and electricity, but the difficulty was now being tackled. In conclusion, the number of candidates for the diplomas of the College remained high—higher than some people might have expected, having regard to the competition of the new universities. The financial position was satisfactory, but more money would be required for research in the future than had been spent in the past, in view of increasing activities.

Dr. M. I. Finucane, referring to the Fellowship examinations held in Canada and Australia, said that the College must, of course, support the aspirations of surgeons over-seas to better their financial status. He asked what cost had been incurred in connexion with these examinations. Dr. E. W. D. Kite asked if research could not be directed to the reduction of mortality among women in childbirth. He hoped that the College was collaborating with other bodies concerned. The President, in reply, said that the good feeling between the Dominions and Colonies and the Motherland had been very much heightened during recent years, and the Council had felt, when approached by Canada and Australia concerning Fellowship examinations, that it should do everything it could to promote that feeling. Colleges and other institutions in Canada had been visited, and much valuable information brought back. He believed that the cost incurred by the College in connexion with the first examination in Canada was £200, and in Australia £156. He promised to convey Dr. Kite's suggestion with regard to education in midwifery to the Museum and Research Committee.

The motion on representation of Members on the Council was in terms almost identical with that of previous years. It reaffirmed that Members, who constituted nine-tenths of the College, should be admitted to direct representation on the Council, particularly having regard to the striking result of the poll of Members recently taken. Dr. Richard Gillbard, in proposing it, said that the resolution had been carried at the previous annual meeting, and Members, in their trustfulness, had thought that the goal was in sight. The Council was elected by about 1,800 Fellows, whereas the Members, ten times that number, were denied a voice. Apart from the lack of direct representation of Members on the Council, he believed that none of the Fellows on the Council were in general practice, so that the Fellows themselves, very many of whom were in such practice, were only partially and half-heartedly represented. There must be reasons why the Council was so peculiarly and exclusively composed, and he could only suppose that it was due to the fear lest the flag of the College be drawn into the political or medico-political arena. He did not think that fear was justified, though, if it were, the Members would say that it was a worthy motive, and one entitled to respect. He suggested that there should be elected to the Council four Members, and he cited the precedent of the General Medical Council, on which there were six representatives directly elected by the profession. Dr. Gillbard also emphasized the necessity for co-ordinating the profession at a time when a State medical service was a possibility. Dr. H. H. Sanguinetti seconded the resolution, he said, in no truculent spirit of opposition, but because he desired the change in order that the College might rise to greater achievements. That there was dissatisfaction with the medical curriculum was shown by recent correspondence in the *British Medical Journal*. The field of work of the general practitioner was a very important one, requiring a special training, different in some respects from that suited to the consultant; and some of the general aspects of medicine, such as diet and various matters concerned with health promotion, were not sufficiently represented in the curriculum. He urged that to effect the reorganization which was desirable in medical education and in other respects there should be general practitioners on the Council of the Royal College, and he begged the present Council not to adopt "too almighty an attitude" towards the humble Members.

As already stated, owing to the lack of a quorum, the resolution could not be put to the meeting, but the President intimated that he would make a report to the Council on what had taken place.

UNIVERSITY OF OXFORD

At a congregation held on November 19th the degree of D.M. (Doctor of Medicine) was conferred on C. L. Cope.

UNIVERSITY OF CAMBRIDGE

At a congregation held on November 18th the degree of M.D. was conferred on R. F. Guymer and J. W. E. Cory.

NATIONAL UNIVERSITY OF IRELAND

University College, Dublin

The following candidates have been approved at the examination indicated:

Third M.B., *Part I* (*Pathology and Materia Medica*).—*F. A. M. FitzGerald, *O. P. N. A. FitzGerald, *J. G. Gallagher, *D. G. Madigan, †T. W. M. D'Arcy, †P. J. Fox, †J. J. Walls, †J. Corcoran, †B. Malley, †T. I. Murphy, †E. O'Shaughnessy, †P. J. H. Clarke, †J. M. Murphy, †Nanette M. Leavy, †B. H. O'Brien, †Kate M. Gordan, †C. B. Mallen, †M. M. J. Enright, †J. Timoney, †P. O'R. Gavin, †J. McKenna, †J. J. O'Dwyer, †M. V. Sheehan, F. A. Akerele, J. O. O. Akerele, Mary B. Brady, P. J. H. Clarke, C. M. Connolly, B. F. J. Kean, P. L. Lynch, J. G. McCarthy, J. J. McCarthy, J. C. Massally. *Part II* (*Medical Jurisprudence and Hygiene.*—†D. K. O'Donovan, †Mary W. Meagher, P. Corry, N. B. Higgins, J. Jordan, L. M. Kiernan, M. K. Mellett, W. J. G. Murphy, G. F. Ryan, D. F. Savage, W. O'Hara. Exempt from further examination in Pathology: J. C. Boyle, P. J. Cremin, T. M. Kavanagh. Exempt from further examination in Part II: S. B. Potter.

* First-class honours. † Second-class honours.

The Services

QUEEN ALEXANDRA'S HOSPITAL FOR OFFICERS

The thirteenth annual reunion dinner of Queen Alexandra's Hospital for Officers was held on November 18th under the chairmanship of Lord Melchett, who was himself a patient in the hospital on two occasions. Over forty of the former patients and members of the staff were present. Major W. B. Binnie responded to the toast of "The Former Patients," proposed by the chairman, and the toast of "Our Guest" (the Right Hon. J. C. C. Davidson, whose father, the late Sir James Mackenzie Davidson, was consulting radiologist to the hospital) was proposed by Mr. Herbert J. Paterson.

DEATHS IN THE SERVICES

Lieut.-Colonel Alfred Eugene Berry, Madras Medical Service (ret.), died in India on September 19th, aged 63. He was born on June 21st, 1869, the son of Alfred Berry, banker, of Vepery, Madras, and was educated at the Madras Medical College, where he took the diploma of L.M.S. in 1891. Coming to England, he took the Scottish triple qualification in 1892, and entered the I.M.S. as surgeon lieutenant on January 29th, 1894. He became lieutenant-colonel on July 29th, 1913, was placed on the selected list for promotion on July 4th, 1918, and retired on December 1st, 1921. He served in the Zakka Khel campaign of 1908, on the North-West frontier of India, and received the frontier medal with a clasp, and in the war of 1914–21, in France and Belgium from November, 1914, to May, 1916, in Mesopotamia in 1918, and also in 1920–21, was thrice mentioned in dispatches, in the *London Gazette of* January 1st, 1916, January 12th, 1920, and September 9th, 1921, and received the C.I.E. on February 7th, 1921.

Medical News

A public meeting to inaugurate the Institute for the Scientific Treatment of Delinquency will be held at University College, Gower Street, W.C., on Tuesday next, November 29th, at 8.30 p.m., with Dr. Edward Glover in the chair. Addresses will be given by the Earl of Feversham, Professor Winifred Cullis, Dr. J. A. Hadfield, Dr. W. Moodie, and Dr. J. R. Rees. Discussion is invited. All communications to be addressed to the honorary secretary of the Institute, 56, Grosvenor Street, W.1.

The British section of the World League for Sexual Reform will hold a meeting at the London School of Hygiene, Keppel Street, W.C., on Wednesday, December 7th, at 8 p.m., when Dr. J. C. Flugel, assistant professor of psychology, University College, London, will speak on modern morals and psycho-analysis.

The thirteenth annual dinner of the medical officers of No. 14 Stationary Hospital, B.E.F., will be held at the Trocadero Restaurant, Piccadilly, on Friday, December 9th. Colonel C. R. Evans, D.S.O., will be in the chair. Any member of the mess wishing to attend who has not received a notice should apply to the secretaries, Lieut.-Colonel H. M. Perry and Dr. H. L. Tidy, 39, Devonshire Place, W.1.

The eleventh annual dinner and reunion of the British Serbian Units Branch of the British Legion, and of those who served in Serbia during the war, will be held on Saturday, December 3rd, at Lysbeth Hall, Soho Square, at 7 for 7.20 p.m. Tickets may be had from the honorary secretary, 24, Melcombe Court, Dorset Square, N.W.1.

The sixth of a series of lectures on renal disease, arranged by the Fellowship of Medicine and Post-Graduate Medical Association, will be given at 11, Chandos Street, at 4 p.m. on November 29th, by Mr. Jocelyn Swan, on tumours of the kidney. These lectures are free to members of the Fellowship. Demonstrations of medical ophthalmology will be given at the Royal Westminster Ophthalmic Hospital, Broad Street, W.C., on December 7th at 5 p.m., and December 8th at 8.30 p.m. A panel of teachers is available daily for personal tuition in almost all branches of medicine and surgery; arrangement for attendance at these clinics must be made through the Fellowship of Medicine, 1, Wimpole Street, W.1.

The post-graduate course arranged by the Royal Northern group of hospitals at the Royal Northern Hospital, Holloway, and the Royal Chest Hospital, City Road, will open on November 29th at 3.15 p.m. at the former hospital, when Mr. L. E. Barrington-Ward will lecture on some surgical causes of indigestion. The last three lectures of the series, on March 1st, 8th, and 15th, will be given at the Royal Chest Hospital. The lectures and demonstrations are open to all medical practitioners free of charge. Particulars may be had from Dr. E. G. B. Calvert, Royal Northern Hospital, N.7.

The National Birth Control Association (with which is incorporated the Birth Control Investigation Committee) will hold its second annual meeting on Tuesday, November 29th, in the Caxton Hall, Westminster, at 4.30 p.m. The business meeting, at which the report of work done during the year will be presented, will be followed by a public meeting at 5 o'clock, with Sir Thomas Horder in the chair, at which the Countess of Limerick will be the principal speaker. Other speakers will be Lady Denman and Sir Allan Powell, formerly chief public assistance officer for the London County Council.

On Friday, December 2nd, Dr. Leo Jacobsohn will arrange, as part of the programme of the physicians' broadcast, a wireless course of recapitulatory lectures on cardiac auscultation. In connexion therewith artificial cardiac sounds will be transmitted via the German sender Königswusterhausen. Professional colleagues are requested to report to the Kaiserin Friedrich-Haus, Berlin NW 7, Robert Koch-Platz 7, with regard to the results of the reception.

The following members of the medical profession were called to the Bar by the Middle Temple on November 17th: Dr. Flora H. M. Calder, Lieut.-Colonel F. H. Harvey, R.A.M.C. (ret.), Dr. Reginald J. Hearn, Dr. J. H. Harley Williams.

A beautifully illustrated note on the Oto-Laryngological Section of the Pathological Museum at the B.M.A. Centenary Meeting, by Messrs. Edward D. D. Davis and Terence Cawthorne, appears in the November number of the *Journal of Laryngology and Otology*.

The trustees of the Rockefeller Foundation have made a further grant of £5,000 towards the research funds of the National Institute of Industrial Psychology, to be expended in the years 1933–6. Previous gifts have enabled the Institute, under the direction of Dr. C. S. Myers, F.R.S., its principal, to conduct an extensive series of researches, all of which have an immediate bearing on industrial and occupational life. The researches now in progress include an inquiry into the ability, and the measurement of the ability, to discriminate between slightly different shades of colour required in colour printing, dyeing, photographic and other work; investigations into manual assembly work and the influence of practice and training therein; experiments on the effects of rhythm in occupational movements, etc. The Institute is also engaged in preparing tests designed to discriminate between those who will and those who probably will never become good motor drivers. Other investigations in progress will improve the Institute's present methods of giving vocational guidance to young people.

The Charterhouse Rheumatism Clinic was opened four years ago for the free treatment of poor persons by stock vaccine injections. Its name is due to the fact that it has been housed by the Charterhouse School Mission in one of their club buildings in South London (Crosby Row, Long Lane, S.E.1). In order to extend the activities of this organization in various directions, and to meet the need for treatment of paying patients of small means, temporary accommodation for a second clinic has been acquired at 94, Hallam Street, W.1. Particulars may be had from the secretary, at that address.

In the *Journal* of September 10th (p. 527) reference was made to Dr. G. W. C. Kaye's paper on the suppression of noise, which he read before the Engineering Section of the British Association at York. The full text of this paper appeared in *Engineering* on September 9th and October 7th, and a reprint in pamphlet form may be consulted at the Library of the British Medical Association.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

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The **TELEGRAPHIC ADDRESSES** are:
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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Wanted: A Home

"AGITANS" (London, W.) asks if any readers know of a suitable home or other institution for an old lady with paralysis agitans. The disease is progressing rather fast, but the patient can still walk and feed herself. She wishes to find somewhere where she could possibly remain for the rest of her life. She could pay about four guineas a week.

Bitter Taste

"Q. U. B." asks for suggestions in regard to the aetiology and treatment of the following case: a female patient, aged 42, who complains of a permanent bitter taste, whose teeth are in good condition, tongue clean, and who shows nothing abnormal in the fauces or nose.

Income Tax

Deduction of Tax from War Loan—Effect of Foreign Exchange Rates on Foreign Dividends

"INQUIRER" asks: (1) Has he no remedy against the deduction of 5s. 6d. in the £ from War Loan and other interest in the second half of 1931–2, seeing that he did not own the stock when the first half-year's interest was paid under deduction of tax at 4s. 6d.? (2) Is interest derived from abroad chargeable at the nominal rate of exchange or is tax payable on that amount as increased by the effect of a favourable exchange rate?

*** (1) He appears to have no remedy; the fact that the additional 6d. in the £ would be deductible from the second half-year's dividends could have been known when the stock was bought, and must be assumed to have been taken into account in the purchase price. (2) Tax is payable according to the amount of the interest converted into sterling at the rate of exchange operating when the interest became due and payable. Where the interest is derived from a "security" tax is payable on the amount falling due in the year of assessment, usually estimated in practice on the previous year's basis and adjusted later, if necessary.

Expenses of Appointments

"J. M." is a full-time public health officer, and, in addition, earns fees as a university lecturer. In the former capacity he receives an allowance of £60 a year for use of a car. Can he claim to deduct subscriptions to the British Medical Association and the Society of Medical Officers of Health—for example, as the professional literature—and depreciation of car?

*** Technically a university lectureship is an "office," and the fees, therefore, are assessable under Schedule E. Accordingly, the same rule can be applied as to the salary as M.O.H., and "J. M." is not entitled to deduct the subscriptions unless membership of the societies is required by the appointing authority. There is some force in the contention that current medical literature is necessary, but in our opinion "J. M." would be fortunate to obtain a favourable decision of the Commissioners on that ground if he appeals to them. With regard to the car depreciation, the point really is whether the car allowance of £60 is adequate, taking one year with another, to cover that element in the "necessary" use of the car on the work of his appointment, not including in such use travelling from his home to the place where his work is normally centred.

Panel Practices and Cash Basis

"S. C." writes to say that the inspector of taxes tried to persuade him to change over from the "cash" to the "bookings" basis. The argument he found effective for the retention of the cash basis was that a considerable part of the gross takings of the practice were from panel work, and as the amount received in the first quarter of one year was in part a final settlement for the previous year, the task of estimating the panel "outstandings" at the end of a year was almost impossible within reasonably accurate limits. The argument is stated here as it may be found helpful to other practitioners faced with a similar request from the Inland Revenue authorities.

Deduction for Expenses

"M. M. N." receives a salary of £102 as medical officer of health, £146 as a panel doctor, and £27 for other professional work. She is unmarried, and has to carry the expense of a house, a maid, and a car. What can she deduct?

*** The best course is to pool the whole receipts and to treat them as assessable under Schedule D. From the amount (£275) can be deducted as professional expenses the cost of running the car and a reasonable proportion—say, one-third or one-half—of the general house expenses. That leaves the sum to be assessed, and further deductions of one-fifth of that amount for earned income relief and £100 personal allowance are due; the balance will be assessable at 2s. 6d. in the £.

Termination of Colonial Appointment

"E. R. G." held a colonial appointment. He sailed for this country on November 6th, and arrived to take up his permanent residence here on December 24th, 1931. He drew his salary through the Crown Agents here for the final period (November 1st, 1931, to February 6th, 1932). What is the basis for liability?

*** He ranks as a British resident for the financial year ending April 5th, 1932, and must account for income tax on the whole of the emoluments received in the United Kingdom. He is, however, entitled to the full yearly personal allowances from the amount of the liable income.

Amalgamation of Practices: Cash Basis

"H. R. P." is a partner in a practice (P. and H.) which has been amalgamated with another practice (B. W. and C.) as from October 1st, 1932. P. and H. have been assessed on the earnings basis and B. W. and C. on the cash basis. Can the new combined practice be assessed on the cash basis? Ought the partners to ask to be treated as a "new business"? P. and H.'s financial year ended on March 25th, and B. W. and C.'s on December 31st.

*** Taking the last question first, it will pay the partners to adhere to the previous year's basis if profits have been rising or are likely to rise, so that unless the converse is anticipated treatment as a new business should not be sought. Assuming that the practice is treated as continuing, there is no strong reason why the cash basis should not be applied, provided that *all* cash received for past accounts is brought into the computation, however it may be dealt with among the partners. But the cash basis is really concessionary, and the inspector of taxes is rather likely to insist on the earnings basis. "H. R. P." does not say to what date the new firm will make up its accounts—presumably to September 30th. The liability for the year 1932–3 will merely fall to be re-divided on the new allocation as from October 1st, 1931, but the gross assessment will remain unaltered. As regards 1933–4 the Board of Inland Revenue is entitled to settle the period over which the profits are to be calculated—for example, by apportioning the past profits of both firms on a time basis to the year ending September 30th, 1932. It would be well to consult the inspector of taxes on this when the time comes to make returns for 1933–4.

LETTERS, NOTES, ETC.

Therapeutic use of Carbon Dioxide Gas

Dr. C. M. Billington (Cambridge) writes: It is not a far cry from the case of whooping-cough, quoted by Dr. J. Dunlop (October 29th, p. 822) as benefited by CO_2 inhalations, to remind medical men of its use in asthma spasms. Asthma is a symptom of a stimulated vagus, leaving the chest in the expiratory phase. Inhalations of CO_2 stimulate the respiratory centre to deep inspirations. The treatment works miraculously. I fit a soft rubber delivery tube to the sparklet apparatus and introduce the tube into the nostril. In a few breaths the spasm relaxes, breathing becomes deeper and deeper, and the colour returns. If the apparatus is left, the sufferer has a feeling of confidence that he has something, which he himself can work, that will give him immediate relief. Apart from the therapeutic value, it is more than half the battle to restore confidence in such cases. I have been told by a representative of Siebe, Gorman and Co., Ltd., how he was able to give great benefit to a man with pneumonia by this method, reducing the respirations from 80 to 30 per minute and completely restoring the colour without any oxygen. Here, however, known percentages of CO_2 are advisable, as the inhalations have to be repeated and prolonged. The apparatus costs £9, but I shall certainly try it the next time a suitable case arises. It will not be long before the profession generally learns to substitute CO_2 for brandy, to stimulate the respiratory centre instead of the heart, in all cases of collapse.

Dr. George Willet (Bristol) writes: Dr. Dunlop asks for cases in which CO_2 is useful other than those in which he has tried it. May I suggest the following uses: (1) In combination with oxygen to ventilate the lungs, and to bring about an early crisis in cases of unresolved pneumonia. (2) In spasmodic asthma its effect is almost instantaneous, and it may be repeated two or three times daily. (3) In chronic rhinitis. (4) In treating warts, in the form of carbon dioxide snow. (5) In the treatment of hiccup. (6) After ether anaesthesia. Its use is quite simple by means of Hurst's sprinkler apparatus.

Repeated Attacks of Measles

Dr. Sidney Matthews (Crawley, Sussex) writes: It may be of interest to know that I have just attended a girl, 8 years old, in her fourth attack of measles, this time of a very severe type. That there could have been no mistake in the diagnoses each doctor has informed the mother that whatever the first attack may have been the following ones left no doubt as to the nature of the illness. Interposed she has had one attack of German measles.

Sterilization of Water by Metallic Silver

Dr. P. J. Edmunds (Dulwich) writes: Kling's results, as described in the *Epitome* (October 29th, para. 380, p. 76), are probably due to mercury, not silver. The beautiful lustre on silver goods as sold is always produced by mercurial polishing powders, which surface the article with an amalgam. No other powder will produce the same effect. The experiments should be repeated with pure silver vessels which have been made red hot so as to volatilize the mercury.

Sympathetic Ganglionectomy

Paragraph 421 in our *Epitome* of November 19th, summarizing Mr. F. A. R. Stammers's paper on sympathetic ganglionectomy, contained a mistake which we hasten to correct. In lines 22–24 of the abstract is the statement that "In cases which are suitable for treatment there should be *no evidence of arterial spasm* . . ." etc. In Mr. Stammers's paper in the July issue of the *British Journal of Surgery* (p. 70), he laid special stress on the fact that there should be DEFINITE *evidence of arterial spasm* before cases are suitable for this treatment.

Grenfell Calendar, 1932

The Grenfell Association announces that the calendar, issued for the first time last year, proved such a success that it has been decided to repeat the experiment. The Grenfell Labrador Calendar for 1933, which will again be sold for the benefit of Sir Wilfred Grenfell's work in Labrador and Newfoundland, consists of a frontispiece in colour entitled "Down North in the Labrador," and a page for every month containing a reproduction of new photographs of Labrador and a quotation from Sir Wilfred's writings. It is hoped that this very attractive calendar will prove even more popular than it did last year. The price is 3s. 6d., packing and postage 6d. extra, and it can be obtained from the offices of the Grenfell Association of Great Britain and Ireland, 82, Victoria Street, S.W.1.

Potassium Permanganate in Suppression of Urine

Dr. Robert Napier (Aden) writes: A short time ago I admitted a boy of 12 suffering from a septic pustular rash on the face and having albumin in the urine. For a few days the temperature remained normal and albumin was abundant, but the amount of urine passed, despite all measures taken, rapidly diminished, until it reached 11, 12, and 5 ounces on each of three successive days. By this time there was considerable oedema, and the child appeared to be dying. I decided to try the effect of a hypodermic injection of potassium permanganate (as outlined in the *Extra Pharmacopoeia*), and gave 1/2 c.cm. of 1/2 per cent. solution. The urine output rose again to 12 ounces, and next day an injection of 1 c.cm. of 1/2 per cent. solution was given, and a satisfactory increase followed (17 ounces). On the third day no injection was given, and the output diminished to such an extent that on the day following I gave 1½ c.cm. of 1/2 per cent. solution. From the time of the last injection, ten days ago, the urinary output has risen rapidly to 40 ounces, and has remained at that level, while the general symptoms and signs are clearing. Though the immediate effects of potassium permanganate in such a case appear to justify its administration, the obvious objection is not only that the injections are painful at the time—quite severely so—but that the tissues tend to break down and slough at the site. I should be interested to learn of the experiences of others in this connexion.

Food and Cleanliness

Dr. George Kaufman (London, W.) writes: Surely it is time for more stringent legislation to ensure better hygienic conditions in the preparation, exposure, and distribution of food. Future generations will be as staggered at the conditions that exist to-day in many kitchens, bakeries, etc., as we are at the thought of the time when surgical wards were death traps, where the surgeon operated in the same frock coat that he used in the post-mortem room. No doubt many places are scrupulously clean, but there are far too many old and vermin-infected kitchens where the habits of the staff are in keeping with the environment. It has always struck me as extraordinary that waiters, instead of wearing clean, washable coats, should be allowed to wear dress suits, year in and year out, until they become saturated with grease and dirt, so dear to the heart of every micro-organism. Many diseases have been practically wiped out by improved hygienic conditions, but much still remains to be done, and it is only by the continuous agitation of the medical press that reforms can be hoped for.

"Avalanche of Circulars"

Dr. Charles J. Heaton (Westgate-on-Sea) writes: Your correspondent "X. M. D." (October 29th, p. 822) has voiced a general complaint as to the bother of having to attend to copious advertisements to ensure not missing important messages. I would point out that succinct advertisements on blotting-paper slips are useful, and if the advertisers tumble to this fact the salving of their endeavours might attract notice, for the blotting slips generally lie about one's desk.

Medical Golf

The autumn golf meeting of the Harrow Division of the British Medical Association took place at Northwood on November 9th, and resulted in some good scores: Dr. Thomson 75, Dr. Watson 78.

A Warning

Dr. Charles F. Stott (Finsbury Park, N.4) writes: I would like to warn my medical colleagues of a person who is going round and defrauding members of the profession. He calls ostensibly to take orders for printed notepaper and billheads, and several doctors in this district have been cheated, having paid for orders which were never executed. This man came to my house and stole some notepaper from my desk, later ordering various articles from local tradespeople in my name. He is well dressed, aged 40 to 50, about 5 ft. 8 in. in height, has prominent artificial teeth, and speaks with a North Country accent.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 48, 49, 50, 51, 54, and 55 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 52 and 53.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 271.

NATURALLY RICH IN VITAMIN "D"

NUTRITIONAL ANÆMIA IN INFANCY

The Minister of Health draws attention in Circular No. 1290 (27th Oct., 1932) to the importance of the results of the investigations carried out under the auspices of the Medical Research Council on Nutritional Anæmia in Infancy (Medical Research Report No. 157 Mackay). In this Circular the Minister recommends all authorities responsible for the care of infants to give practical effect to the recommendations made as the result of these researches for the prevention and cure of Nutritional Anæmia. The Milk Food which was used exclusively in this extensive work, and which is still being recommended for this purpose is

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